ANNUAL REPORT 2020



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CENTRE FOR MARINE SOCIOECOLOGY

INTRODUCTION

Australia is a marine nation with over 87% of the population living within 50 km of the coast, and our oceans play an important role ecologically, socially and economically. Our marine environment is critically important for the cultural practices of Indigenous communities and as the world's third largest marine jurisdiction, is home to many marine species that occur nowhere else in the world. Our marine regions provide valuable services through the provision of food, energy, transportation, tourism, conservation and recreation, and by 2025, just 4 years away, our marine industries are projected to contribute around \$100 billion each year to Australia's overall economy.

However, further demands and pressures on coasts and oceans are expected with increasing coastal populations, food security needs and emerging industries, such as renewable energies and offshore marine production systems. Managing these multiple uses, often with 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 unique collaboration between the University of Tasmania (UTAS) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), with support from the Australian Antarctic Division (AAD). It was established in 2014 to provide, develop and integrate the interdisciplinary teaching and research capacity required to underpin sustainable management of Australia's coastal zone and ocean in a rapidly changing world. It brings together an extraordinary diversity of disciplinary expertise, and considers multiple knowledge systems, in active collaborations to directly address both the theoretical and applied aspects of marine socioecological systems.

We are extremely pleased to see in this annual report that despite the great challenges 2020 presented for the whole world, the Centre has continued to grow international recognition for the challenging research being conducted and communicated in innovative ways, and for the training of students in interdisciplinary sciences. We look forward to its continued success into the future.

Professor Anthony Koutoulis

Deputy Vice-Chancellor (Research) University of Tasmania

Dr Andreas Schiller Director, CSIRO Oceans and Atmosphere

We acknowledge and pay respect to the traditional owners and custodians of sea country all around Australia, in particular *lutruwita* (Tasmania), and recognise their collective wisdom and knowledge of our oceans and coasts.

BACKGROUND

The Centre for Marine Socioecology continues to go from strength to strength in both research and post graduate training. We bring together disciplinary expertise in physics, law, economics, biology, sociology, psychology, human health, art, media, philosophy and governance from the Institute for Marine and Antarctic Studies, the College of Art, Law and Education, the College of Health and Medicine, the Tasmanian School of Business and Economics, the School of Technology, Environments and Design, the CSIRO and the Australian Antarctic Division (AAD). We are also fortunate to have valuable participation from other leading Australian and International institutes.

CMS embraces the extensive knowledge of the traditional owners of Australia, working collaboratively with Indigenous scientists, Elders and knowledge holders to collectively enhance our understanding of our oceans and coasts.

In this report we are pleased to showcase a selection of our research and other activities from 2020. On the surface, it may look like any other successful year, but we want to acknowledge that 2020 was a year not like any other; the circumstances of 2020 created a lot of stress for our staff, and particular, our students. Many students were concerned about overseas friends and family, or were overseas and unable to return to Tasmania, and most experienced substantial impacts on their projects.

Wholehearted thanks to all our students, researchers, collaborators and stakeholders, for their ongoing efforts in the Centre of Marine Socioecology during this exceptionally challenging year. Not only has your generosity and enthusiasm enriched our collective efforts, but the contributions and outcomes are being realized across a broad spectrum of activity, relevant at local, regional and global scales.

We continue to be proud of the Centre's outputs and outcomes and are delighted to see the Centre's rapidly developing international reputation.

We look forward to continuing this work with you in 2021.

Crettakel

Professor Gretta Pecl (IMAS) Director

Dr Beth Fulton (CSIRO) Deputy Director

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

L-R: Gretta Pecl and Beth Fulton

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









WHO WE ARE IN NUMBERS





BUILDING CAPACITY TO PROVIDE SKILLS AND SOLUTIONS FOR INDUSTRY, GOVERNMENT AND THE COMMUNITY

MARINESOCIOECOLOGY.ORG

RESEARCH THEMES



Download the CMS themes brochure here:

https://marinesocioecology.org/wp-content/uploads/UTAS_CMS_Brochure_Web.pdf

CMS VALUES

During 2019-2020 we worked to formulate and define the values CMS works by. These values define and enable a positive work culture within the centre. Our Values Charter guides our work, inspires us, and makes us proud to be part of CMS.



Collaboration: we are stronger & more innovative through the power of partnerships

- We work in teams, taking and sharing responsibility to achieve common goals and overcome challenges
- We are collegial, combining our strengths to support one another
- We value diversity, actively seeking out and respecting the contributions of a range of people and perspectives

Excellence and Impact: we strive for quality and meaning

- We aim to use innovative, multi-disciplinary, interdisciplinary and transdisciplinary approaches to yield new insights
- We take a holistic view of the problem-solving and knowledge-system seascape
- We strive to make a difference to the oceans and the well-being of the people that depend on them

Learning and sharing

- We use knowledge and research to achieve better outcomes & continuously improve and learn from our experience
- We communicate our research, and engage with communities in understanding the world and addressing challenges, as a core part of our job or training

We are committed to projects, partnerships and ways of working that seek to achieve the best outcomes for our people as well as our projects

- We acknowledge with deep respect the traditional owners of the lands, waterways, seas and skies in which we work and live
- We respect each other's values, cultures and world-views
- We recognise that innovation involves taking risks, and we aim to create a safe space for learning and exploration to encourage members to push their boundaries (and support each other in learning when this doesn't work out)
- We share information, knowledge and skills, with a 'coaching culture' to provide support and encouragement to others
- We acknowledge and give credit to colleagues we strive to amplify others' successes
- We treat people equally, without prejudice, and focus on achieving equity
- We commit to making science family-friendly
- We have a culture of honesty and integrity. We speak up when we see our values being challenged

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2020 HIGHLIGHTS

I had no idea what I wanted out of the course but now I want more

Engagement from mentors, participants and stakeholders was electrifying and the breadth of information fantastic



Great design and facilitation

CMS Inaugural Interdisciplinary summer school

CMS is such a valuable resource for PhD students and interdisciplinary research training, it has really had an impact on how I will make decisions as a scientist CMS ran its inaugural Interdisciplinary Summer School in Hobart in February 2020 over a week. The theme of the summer school was 'Interdisciplinary Skills for Equitable Climate Adaptation in Socioecological Systems'.

GREAT!!!



Very well thought through and fun – should be a requirement for all researchers

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Beth Fulton awarded the Beverton medal

Beth Fulton was awarded the Beverton medal in recognition of her ground-breaking research and lifelong contribution to the study of fish and fisheries science.





Jess Melbourne-Thomas 2020 Tasmanian Australian of the year

We are all so very proud of, and happy for, Jess Melbourne-Thomas whose rich research history, such as her efforts in advancing understanding of marine socioecological systems, and passionate advocacy for diversity and gender equality in science, saw her named Tasmanian Australian of the year in 2020.

CMS New Website

The CMS website was revamped to highlight more clearly who we are and what we do. Individual profiles of researchers are now available, to ease access and further collaboration, and the rich literature CMS is generating is also now more easily accessed. Please visit: https://marinesocioecology.org/



2020 SNAPSHOT







BOOKS & CHAPTERS





REPORTS & OTHER PUBLICATIONS



FUNDING GRANTS

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CONFERENCES & PRESENTATIONS





EVENTS/ACTIVITIES





RESEARCHERS



AWARDS & PRIZES

SELECTED CMS THEMES HIGHLIGHTS



Coastal & Marine Governance

Led by Karen Alexander & Pedro Fidelman

New book by **Marcus Haward** "Governing Oceans in a Time of Change: Fishing for a Future"

Papers led by CMS student **Bianca Haas**, who recently submitted her PhD thesis, on Fisheries and Sustainable Development Goals:

Haas, B, Fleming, A, McGee, J & Haward, M 2020, 'Regional fisheries organizations and Sustainable Development Goals 13 and 14: Insights from stakeholders', Fisheries Research, vol. 226, 105529.

Haas, B 2020, 'Tuna management in action: assessing the contribution of the WCPFC to the SDGs', Australian Journal of Maritime and Ocean Affairs, vol. 12(1): 42–47.

Haas, B, Haward, M, McGee, J & Fleming, A 2020, 'Regional fisheries management organizations and the new biodiversity agreement: Challenge or opportunity?', *Fish and Fisheries*, no. June.







Sustainable Futures & Planetary Health

Led by Kirsty Nash & Anna Farmery

A CMS Communication challenge was organised by this theme to showcase CMS research. The first prize was awarded to PhD student **Peter Puskic** for his fantastic video on Marine pollution.

Kirsty Nash won a prestigious ARC DECRA fellowship for her project "Effects of environmental change on seafood micronutrients".

Paper by **Cottrell, RS**, **Blanchard, JL**, Halpern, BS, Metian, M & Froehlich, HE on 'Global adoption of novel aquaculture feeds could substantially reduce forage fish demand by 2030', *Nature Food*, vol. 1(5): 301–308.





Environmental Change & Adaptation

Led Ingrid van Putten & Rowan Trebilco

Ingrid van Putten was appointed to the scientific board of Universität Hamburg Centre of excellence "Climate, Climatic Change, and Society (CLICCS)". The collaboration on this 7-year research cluster will focus on 'Which climate futures are possible - and which ones are plausible?

Rowan Trebilco was part of the National Marine Science Council's Baselines and Monitoring working group. The working group's final report, which outlined recommendations for developing a national approach to baselines and monitoring, was endorsed by the NMSC in April.

PAPERS:

• Allison, E, Kurien, J, Ota, Y, Adhuri, D, Bavinck, J, Cisneros-Montemayor, A, Fabinyi, M, Jentoft, S, Lau, S, Mallory, T, Olukoju, A, **van Putten, I**, Stacey, N, Voyer, M, & Weeratunge, N 2020. The Human Relationship with Our Ocean Planet. Blue paper to the UN.



 Davies, KK, Fisher, KT, Couzens, G, Allison, A, van Putten, El, Dambacher, JM, Foley, M & Lundquist, CJ 2020, 'Trans-Tasman Cumulative Effects Management: A Comparative Study', Frontiers in Marine Science, vol. 7, no. February.

VISITORS (DESPITE COVID!):

- CMS was visited by PhD student Clara Obregon from Murdoch University. Clara's PhD research focuses on the social and ecological dimensions of a small-scale fishery in Western Australia: the blue swimmer crab. Specifically, Clara looks at the dynamics between management, population stocks, and fisher behaviour.
- PhD student Laura Kaikkonen from the University of Helsinki also spent time at CMS. Laura's research is looking at estimating how human activities affect marine ecosystems and how to improve risk assessments for emerging maritime activities, particularly in the context of seabed mining.



Knowledge Production

Led by Jess Melbourne-Thomas & Maree Fudge

ONLINE SEMINARS:

Constable, A. "Prioritising science, policy and decision-making in managing socio-ecological issues: context is everything! "CMS Knowledge Production theme: science-policy seminar, 8th September 2020.

Leith, P. Bridging research, policy and practice for sustainability. CMS Knowledge Production theme: science-policy seminar, 5th May 2020.





Science Engagement & Impact

Led by Rachel Kelly & Geoff Syme

Rachel Kelly led a paper highlighting the CMS communication innovation project 'Curious Climate' (see www.curiousclimate.com for more info)



R. Kelly, J. Nettlefold, D. Mossop, S. Bettiol, S. Corney, C. Cullen-Knox, A. Fleming, P. Leith, J. Melbourne-Thomas, E. Ogier, E. I. van Putten and G. T. Pecl (2020). "Let's talk about climate change: Developing effective conversations between scientists and communities." One Earth, vol. 3(4): 415–419, 3.

Kelly et al 2020

SUMMARY OF SCIENTIFIC OUTPUTS

CMS strongly values our direct connections with local stakeholders and the applied impacts of our research; however we also have strong academic impact at the global scale. Our staff and students have collectively published with hundreds of international co-authors, with citation metrics more than double the world average for similar publications.

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 value of 1 indicates world average). All the metrics were calculated based on 71 papers which were available in Scopus (using SciVal software).

Overall research performance for 20201





Outputs in Top Citation Percentiles

CMS Publications in top 10% most cited world wide (field-weighted)

Publications in Top Journal Percentiles

CMS Publications in top

10% journals by CiteScore

Percentile

International Collaboration

CMS publications co-authored with institutions in other countries/regions



PUBLICATIONS

PAPERS

1. Alexander, KA, Amundsen, VS & Osmundsen, TC 2020, "Social stuff" and all that jazz: Understanding the residual category of social sustainability', *Environmental Science and Policy*, vol. 112: 61–68.

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- 2. Alexander, KA, Liggett, D, Leane, E, Nielsen, HEF, Bailey, JL, Brasier, MJ & Haward, M 2020, 'What and who is an Antarctic ambassador?', *Polar Record*, vol. 55: 497–506.
- Allison, E, Kurien, J, Ota, Y, Adhuri, D, Bavinck, J, Cisneros-Montemayor, A, Fabinyi, M, Jentoft, S, Lau, S, Mallory, T, Olukoju, A, van Putten, I, Stacey, N, Voyer, M, & Weeratunge, N 2020. 'The Human Relationship with Our Ocean Planet'. Blue paper to the UN.
- Audzijonyte, A, Richards, SA, Stuart-Smith, RD, Pecl, G, Edgar, GJ, Barrett, NS, Payne, N & Blanchard, JL 2020, 'Fish body sizes change with temperature but not all species shrink with warming', Nature Ecology and Evolution, vol. 4(6): 809–814.
- 5. Bammer, G, O'Rourke, M, O'Connell, D, Neuhauser, L, Midgley, G, Klein, JT, Grigg, NJ, Gadlin, H, Elsum, IR, Bursztyn, M, Fulton, EA, Pohl, C, Smithson, M, Vilsmaier, U, Bergmann, M, Jaeger, J, Merkx, F, Vienni Baptista, B, Burgman, MA, Walker, DH, Young, J, Bradbury, H, Crawford, L, Haryanto, B, Pachanee, C aim, Polk, M & Richardson, GP 2020, 'Expertise in research integration and implementation for tackling complex problems: when is it needed, where can it be found and how can it be strengthened?', *Palgrave Communications*, vol. 6(1).
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- Bestley, S, Ropert-Coudert, Y, Bengston Nash, S, Brooks, CM, Cotté, C, Dewar, M, Friedlander, A, Jackson, JA, Labrousse, S, Lowther, AD, McMahon, CR, Phillips, RA, Pistorius, PA, **Puskic, PS**, de A. Reis, AO, Reisinger, RR, Santos, M, Tarszisz, E, Tixier, P, Trathan, PN, Wege, M & Wienecke, B 2020, 'Marine Ecosystem Assessment for the Southern Ocean: birds and marine mammals', *Frontiers in Ecology and the Environment*, vol. 8.
- 8. Blythe, J & **Cvitanovic, C** 2020, 'Five Organizational Features That Enable Successful Interdisciplinary Marine Research', *Frontiers in Marine Science*, vol. 7.



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- Bryndum-Buchholz, A, Prentice, F, Tittensor, DP, Blanchard, JL, Cheung, WWL, Christensen, V, Galbraith, ED, Maury, O & Lotze, HK 2020, 'Differing marine animal biomass shifts under 21st century climate change between Canada's three oceans', *Facets*, vol. 5(1): 105–122.
- **11.** Bossi, L 2020, 'Blue Ecofeminism: Rethinking Our Oceans and Remembering the Goddess', *Language, Culture, Environment*, vol. 1.
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- **13.** Chikudza, L, Gauzente, C, Guillotreau, P & Alexander, KA 2020, 'Producer perceptions of the incentives and challenges of adopting ecolabels in the European finfish aquaculture industry: A Q-methodology approach', *Marine Policy*, vol. 121, 104176.
- 14. Cieslak, M, Tixier, P, Hindell, M, Arnould, JPY & Lea, M-A 2021, 'Acoustics and photo-identification provide new insights on killer whale presence and movements when interacting with longline fisheries in South East Australia', *Fisheries Research*, vol. 233, no. September 2020, (online in 2020).
- **15. Cottrell, RS**, **Blanchard, JL**, Halpern, BS, Metian, M & Froehlich, HE 2020, 'Global adoption of novel aquaculture feeds could substantially reduce forage fish demand by 2030', *Nature Food*, vol. 1(5): 301–308.



- **16.** Cullen-knox, C, Fleming, A, Lester, L & Ogier, E 2020, 'Tracing Environmental Sustainability Discourses: An Australia-Asia Seafood Case Study', *Frontiers in Marine Science*, vol. 7, no. March.
- **17. Cvitanovic, C**, Colvin, RM, Reynolds, KJ & Platow, MJ 2020, 'Applying an Organizational Psychology Model for Developing Shared Goals in Interdisciplinary Research Teams', *One Earth*, vol. 2:75–83.
- **18.** Cvitanovic, C, van Putten, IE, Kelly, R, Feldman, HR, van Steveninck, TJ, Mackay, M, Badullovich, N & Gourlay, T 2020, 'Engaging more effectively with visitors to coastal regions for improved management outcomes: insights from the Ningaloo Coast, Australia', *Frontiers in Marine Science*, vol. 7, no. July, 583.
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- **23.** Fogarty, HE, Cvitanovic, C, Hobday, AJ & Pecl, GT 2020, 'An assessment of how Australian fisheries management plans account for climate change impacts', *Frontiers in Marine Science*, no. 7, 591642.
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- **29. Haas, B** 2020, 'Tuna management in action: assessing the contribution of the WCPFC to the SDGs', *Australian Journal of Maritime and Ocean Affairs*, vol. 12(1): 42–47.
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- **43.** Hoshino, E, **van Putten, I**, Pascoe, S & Vieira, S 2020, 'Individual transferable quotas in achieving multiple objectives of fisheries management', *Marine Policy*, vol. 113, no. November, 103744.
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- **45.** Kelly, R, Fleming, A, Mackay, M, García, C & Pecl, GT 2020, 'Social licence for marine protected areas', *Marine Policy*, vol. 115, 103782.
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47. Kelly, R, Nettlefold, J, Mossop, D, Bettiol, S, Corney, S, Cullen-knox, C, Fleming, A, Leith, P, Melbourne-Thomas, J, Ogier, E, van Putten, I & Pecl, GT 2020, 'Let's Talk about Climate Change: Developing Effective Conversations between Scientists and Communities', One Earth, vol. 3(4): 415–419.

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- **49.** Mackay, M, Hardesty, BD & Wilcox, C 2020, 'The Intersection Between Illegal Fishing, Crimes at Sea, and Social Well-Being', *Frontiers in Marine Science*, vol. 7, no. October.



- 50. Mackay, M, van Putten, El, Yamazaki, S, Jennings, S & Sibly, H 2020, 'Me and My Behavior: An Experiment on Individual Characteristics and Compliance Behavior in Recreational Fishing', Frontiers in Marine Science, vol. 7, no. September.
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- **55.** Nasrudin, R, Resosudarmo, BP, **Yamazaki, S** & Girsang, W 2020, 'Contribution of cash transfers in moderating household food insecurity in small-island communities: Experimental evidence from Indonesia', *Marine Policy*, vol. 118, no. May, 104025.
- 56. Nettlefold, J & Pecl, GT 2020, 'Engaged Journalism and Climate Change: Lessons From an Audience-led, Locally Focused Australian Collaboration', Journalism Practice, pp. 1–16.
- 57. Norström, AV, Cvitanovic, C, Löf, MF, West, S, Wyborn, C, Balvanera, P, Bednarek, AT, Bennett, EM, Biggs, R, de Bremond, A, Campbell, BM, Canadell, JG, Carpenter, SR, Folke, C, Fulton, EA, Gaffney, O, Gelcich, S, Jouffray, J-B, Leach, M, Le Tissier, M, Martín-López, B, Louder, E, Loutre,





Fig. 1 | Principles for knowledge co-production in sustainability research. High-quality knowledge co-production for sustainability should be contextbased, pluralistic, goal-oriented and interactive.

M-F, Meadow, AM, Nagendra, H, Payne, D, Peterson, GD, Reyers, B, Scholes, R, Speranza, CI, Spierenburg, M, Stafford-Smith, M, Tengö, M, van der Hel, S, **van Putten, I**, Österblom, H 2020, 'Principles for knowledge co-production in sustainability research', *Nature Sustainability*, vol. 3: 182-190.

- **58.** Novaglio, C, Smith, ADM, Frusher, S & Ferretti, F 2020, 'Identifying historical baseline at the onset of exploitation to improve understanding of fishing impacts', *Aquatic Conservation: Marine and Freshwater Ecosystems*, vol. 30(3): 475–485.
- **59.** Obregón, C, Admiraal, R, **van Putten, I**, Hughes, M, Tweedley, JR & Loneragan, NR 2020, 'Who you speak to matters: information sharing and the management of a small-scale fishery', *Frontiers in Marine Science*, vol. 7, no. October.
- **60.** Ogar, E, **Pecl, G** & Mustonen, T 2020, 'Science Must Embrace Traditional and Indigenous Knowledge to Solve Our Biodiversity Crisis', *One Earth*, vol 3: 5–8.
- **61.** Ogier, E, Jennings, S, Fowler, A, **Frusher, S**, Gardner, C, Hamer, P, **Hobday, AJ**, Linanne, A, Mayfield, S, Mundy, C, Sullivan, A, Tuck, G, Ward, T & **Pecl, G** 2020, 'Responding to Climate Change: Participatory Evaluation of Adaptation Options for Key Marine Fisheries in Australia's South East', *Frontiers in Marine Science*, vol. 7, no. March.
- **62.** Osmundsen, TC, Amundsen, VS, **Alexander, KA**, Asche, F, Bailey, J, Finstad, B, Olsen, MS, Hernández, K & Salgado, H 2020, 'The operationalisation of sustainability: Sustainable aquaculture production as defined by certification schemes', *Global Environmental Change*, vol. 60, no. December, 102025.





- 63. Österblom, H, Cvitanovic, C, van Putten, I, Addison, P, Blasiak, R, Jouffray, JB, Bebbington, J, Hall, J, Ison, S, LeBris, A, Mynott, S, Reid, D & Sugimoto, A 2020, 'Science-Industry Collaboration: Sideways or Highways to Ocean Sustainability?', One Earth, vol. 3(1): 79–88.
- 64. Pethybridge, HR, Fulton, EA, Hobday, AJ, Blanchard, J, Bulman, CM, Butler, IR, Cheung, WWL, Dutra, LXC, Gorton, R, Hutton, T, Matear, R, Lozano-Montes, H, Plagányi, EE, Villanueva, C & Zhang, X 2020, 'Contrasting Futures for Australia's Fisheries Stocks Under IPCC RCP8. 5 Emissions – A Multi-Ecosystem Model Approach', Frontiers in Marine Science, vol. 7, no. October, 577964.
- **65. Reum, JCP, Blanchard, JL**, Holsman, KK, Aydin, K, Hollowed, AB, Hermann, AJ, Cheng, W, Faig, A, Haynie, AC & Punt, AE 2020, 'Ensemble Projections of Future Climate Change Impacts on the Eastern Bering Sea Food Web Using a Multispecies Size Spectrum Model', *Frontiers in Marine Science*, vol. 7, no. March.
- 66. Robinson, LM, Marzloff, MP, van Putten, I, Pecl, G, Jennings, S, Nicol, S, Hobday, AJ, Tracey, S, Hartmann, K, Haward, M & Frusher, S 2020, 'Decision support for the Ecosystem-Based Management of a Range-Extending Species in a Global Marine Hotspot Presents Effective Strategies and Challenges', Ecosystems.
- **67.** Rubio, I, Ganzedo, U, **Hobday, AJ** & Ojea, E 2020, 'Southward re-distribution of tropical tuna fisheries activity can be explained by technological and management change', *Fish and Fisheries*, vol. 21(3): 511–521.
- 68. Saucède, T, Eléaume, M, Jossart, Q, Moreau, C, Downey, R, Bax, N, Sands, C, Mercado, B, Gallut, C & Vignes-Lebbe, R 2020, 'Taxonomy 2.0: Computer-aided identification tools to assist Antarctic biologists in the field and in the laboratory', *Antarctic Science*, vol. 13: 1–13.

- 69. Sauer, WHH, Gleadall, IG, Downey-Breedt, N, Doubleday, Z, Gillespie, G, Haimovici, M, Ibáñez, CM, Katugin, ON, Leporati, S, Lipinski, MR, Markaida, U, Ramos, JE, Rosa, R, Villanueva, R, Arguelles, J, Briceño, FA, Carrasco, SA, Che, LJ, Chen, C-S, Cisneros, R, Conners, E, Crespi-Abril, AC, Kulik, V V, Drobyazin, EN, Emery, T, Fernández-Álvarez, FA, Furuya, H, González, LW, Gough, C, Krishnan, P, Kumar, B, Leite, T, Lu, C-C, Mohamed, KS, Nabhitabhata, J, Noro, K, Petchkamnerd, J, Putra, D, Rocliffe, S, Sajikumar, KK, Sakaguchi, H, Samuel, D, Sasikumar, G, Wada, T, Zheng, X, Tian, Y, Pang, Y, Yamrungrueng, A & Pecl, G 2019, 'World Octopus Fisheries', *Reviews in Fisheries Science & Aquaculture*, pp. 1–151.
- **70.** Simon, M, Brent, K, **McDonald, J** & **McGee, J** 2020, 'Enhancing the weather: Governance of weather modification activities in Australia', *Environmental and Planning Law Journal*, vol. 37, no. 6, pp. 698–719.
- **71.** Stevenson, SL, Watermeyer, K, Caggiano, G, **Fulton, EA**, Ferrier, S & Nicholson, E 2020, 'Matching biodiversity indicators to policy needs', *Conservation Biology*, (published online)
- 72. Taboada, MB, Rojas-Lizana, S, Dutra, LXC & Levu, AVLM 2020, 'Decolonial Design in Practice: Designing Meaningful and Transformative Science Communications for Navakavu, Fiji', Design and Culture, vol. 12(2): 141–164.
- 73. Trebilco, R, Melbourne-Thomas, J & Constable, AJ 2020, 'The policy relevance of Southern Ocean food web structure: Implications of food web change for fisheries, conservation and carbon sequestration', *Marine Policy*, vol. 115, 103832.
- 74. Twiname, S, Audzijonyte, A, Blanchard, JL, Champion, C, Chesnais, T De, Fitzgibbon, QP, Fogarty, HE, Hobday, AJ, Kelly, R, Murphy, KJ, Oellermann, M, Peinado, P, Tracey, S, Villanueva, C, Wolfe, B & Pecl, GT 2020, 'A cross-scale framework to support a mechanistic understanding and modelling of marine climate-driven species redistribution, from individuals to communities', *Ecography*, vol. 43.

Graphical abstract



- **75. Uffman-Kirsch, LB**, **Richardson, BJ** & **van Putten, EI** 2020, 'A New Paradigm for Social License as a Path to Marine Sustainability', *Frontiers in Marine Science*, vol. 7, no. October.
- **76.** van Putten, I, Longo, C, Arton, A, Watson, M, Anderson, CM, Himes-Cornell, A, Obregón, C, Robinson, L & Van Steveninck, T 2020, 'Shifting focus: The impacts of sustainable seafood certification', *PLoS ONE*, vol. 15, no. 5, 0233237.
- 77. Vince, J, Hardesty, BD & Wilcox, C 2020, 'Progress and challenges in eliminating illegal fishing', *Fish and Fisheries*, no. June.
- **78.** Vince, J & Day, J 2020, 'Effective integration and integrative capacity in marine spatial planning', *Maritime Studies*, vol. 19: 317–332.

- **79.** Wisz, MS, Satterthwaite, EV, **Fudge, M**, **Fischer, M**, Polejack, A, John, MS, Fletcher, S & Rudd, MA 2020, '100 Opportunities for More Inclusive Ocean Research: Cross-Disciplinary Research Questions for Sustainable Ocean Governance and Management', *Frontiers in Marine Science*, vol. 7, no. August.
- **80. Zhang, M**, **Haward, M** & **McGee, J** 2020, 'Marine plastic pollution in the polar south: Responses from Antarctic Treaty System', *Polar Record*, pp. 1–9

BOOKS

- 1. Haward, M 2020, Governing Oceans in a Time of Change: Fishing for a Future, Edward Elgar Publishing, Cheltenham UK.
- 2. McDonald, J, McGee, J & Barnes, R (eds) 2020, Research Handbook on Climate Change, Oceans and Coasts, Edward Elgar Publishing, Cheltenham, UK.
- **3. Richardson, BJ** (ed) 2020, From Student Strikes to the Extinction Rebellion: New Protest Movements Shaping our Future, Edward Elgar Publishing; 200 pp.



BOOK CHAPTERS

- 4. Bossi, L. 'COVID-19 lockdown: A time for existential reflection'. In: *The Festival of Urbanism: Making Better Places.* Sydney: The Henry Halloran Trust, The University of Sydney. pp1-8 (2020).
- Gogarty, B, Bax, N, Barnes, DKA, Sands, CJ, McGee, J, Haward, M, Lund Paulsen, M, Moreno, B, Moreau, C, Held, C, & Downey, R. 'Part Five: Innovative governance for marine-based climate mitigation. Protecting Antarctica's coastal blue carbon: a case for international cooperation'. In J McGee, J McDonald and RA Barnes (eds), *Research Handbook on Climate Change, Oceans and Coasts.* Edward Elgar Publishing (2020).
- 6. Haward, M. 'Oceans Plastics Charter'. In J-F Morin & A Orisni (eds), *Essential Concepts of Global Environmental Governance*, Earthscan/Routledge, Oxford, pp. 171–172 (2020).
- 7. Lester, L. & Foxwell-Norton K.(2020) 'Citizens and Science: Media, Communication and Conservation'. In W Sutherland et al (eds) Conservation Research, Policy and Practice, Cambridge: Cambridge University Press.

- 8. Richardson, BJ, 'Art and Activism in Transnational Environmental Governance'. In LA Duvic-Paoli and V Heyvaert (eds), Handbook of Transnational Environmental Law (Edward Elgar Publishing: Cheltenham), 248-266 (2020).
- 9. Smith, D. 'A global network of MPAs: an important tool in addressing climate change'. In J McGee, J McDonald and RiA Barnes (eds), Research Handbook on Climate Change, Oceans and Coasts. Edward Elgar Publishing (2020).
- 10. Stoll, T Stoett, P, Vince, J, Hardesty, BD, "Governance and Measures for the Prevention of Marine Debris". In T Rocha-Santos, M Costa and C Mouneyrac (ed), Handbook of Microplastics in the Environment, Springer, Switzerland, pp. 1-23. ISBN 978-3-030-10618-8 (2020).

REPORTS

- Blanchard, J, Cameron, DD, Cottrell, R (2020). Making Connections from Land to Sea. In WWF Living Planet Report 2020 – Bending the curve of biodiversity loss. Almond, R.E.A., Grooten M. and Petersen, T. (Eds). WWF, Gland, Switzerland. Pages 136-137.
- Blanchard, J (2020). Contributing author for the IPPC Special Report on 'Climate Change and Land' (land-sea interactions and food security).
- **3.** Boaz, A, Hopkins, A, Aarons, G, **Cvitanovic, C** (2020). A synthesis of the Theories of Action that inform Research Practice Partnerships and Boundary Spanning between science and policy. Final Report to the William T Grant Foundation and PEW Charitable Trusts, Washing DC, USA.
- 4. Cullen-Knox, C & Fudge, M (2020) Research Review Report: addressing the social dimensions and governance challenges of implementing integrated management, prepared for New South Wales Department of Primary Industries Fisheries. In this project, CMS researchers Coco Cullen-Knox and Maree Fudge partnered with the NSW Social Research-Marine Ecosystems unit to synthesize all of CMS existing research relating to integrated management and make it meaningful for a set of identified challenges and opportunities related to the implementation of the NSW Marine Estate Strategy.
- 5. Gilardi, KVK, Antonelis, K., Galgani, F, Grilly, E, He, P, Linden, O, Piermarini, R, Richardson, K, Santillo, D, Thomas, SN, Van den Dries, P & Wang, L (2020). Sea-based sources of marine litter a review of current knowledge and assessment of data gaps. Second Interim Report of GESAMP Working Group 43.
- 6. Komyakova, V, Vince, J & Haward, M (2020). Microplastics and the Australian Marine Environment: Issues and Options, National Environmental Science Program, Marine Biodiversity Hub, IMAS, University of Tasmania, Milestone 6.
- 7. Komyakova, V, Vince, J & Haward, M (2020). Primary microplastics in the marine environment: scale of the issue, sources, pathways and current policy, National Environmental Science Program, Marine Biodiversity Hub, IMAS, University of Tasmania, Milestone 3, V6.
- 8. Rissik, D, Fidelman, P, Shaw, J & Haward, M. (2020). Developing a policy and regulatory research plan for Australia's emerging blue economy, 5.20.004 Project Report. Hobart: Blue Economy Cooperative Research Centre.
- 9. Rissik, D, Fidelman, P, Shaw, J & Haward, M (2020). Developing a policy and regulatory research plan for Australia's emerging blue economy, 5.20.004 Draft Project Report. Hobart: Blue Economy Cooperative Research Centre.
- **10.** Ross, J, Wild-Allen, K, Andrewartha, J, Beard, J, Moreno, D & **MacLeod, K** (2020). Understanding oxygen dynamics and the importance for benthic recovery in Macquarie Harbour-Progress Report.



- 11. Tinch, DR, Ogier, EM, Yamazaki, S, Rust, SA, Nichols, RL, Spanou, E & Pecl, GT (2020). Economics of underexploited fisheries in the Southern Ocean and their potential contribution to global food security. Final Report. Department of Agriculture and Water Resources (2020).
- 12. Wyborn, C & **Cvitanovic, C** (2020). Understanding research Impact: mechanisms to improve the design and delivery of research at the interface of science, policy and practice. Final Report to the PEW Charitable trusts, Washing DC, USA.
- **13.** Centre for Marine Socioecology Annual report 2019.

OTHER PUBLICATIONS

- 1. CMS Pathways to Impact Plan, 2020, https://marinesocioecology.org/wp-content/uploads/UTAS_CMS_ Pathways-to-Impact-Plan_Web.pdf
- 2. CMS Research Themes brochure, 2020, https://marinesocioecology.org/wp-content/uploads/UTAS_ CMS_Brochure_Web.pdf
- CMS, "Creating a vision to guide development of a sustainable ocean future: the Future Seas 2030 initiative". Ocean Action 35402, United Nations, https://oceanconference.un.org/ commitments/?id=35402
- Cvitanovic, C, Blog: "Four Principles for practising and evaluating co-production a view from sustainability research". In the London School of Economics and Political Science Impact Blog Series. Published 22 January 2020.
- D'Alessandro, S, Bailey, T, Chuah, S & Vince, J, "Submission to the House Standing Committee on Industry, Science and Resources on Innovative solutions to Australia's waste management and recycling industries", Parliament of Australia, 2020
- 6. McCormack, P, co-authored a submission to the independent review of the Environment Protection and Biodiversity Conservation Act 1999 (Cth), April 2020.
- 7. Salazar, JF, Leane, E, Marx, K, Magee, L, Khan, M, James, P, "Custodians of Antarctica: how 5 gateway cities are embracing the icy continent", The Conversation, 30th Nov 2020.

CONFERENCES & PUBLIC PRESENTATIONS

CONFERENCE CONVENING & SYMPOSIA

- **Bax N.** Co-convener, The Antarctic Seafloor Ecosystem interactions and environmental drivers of change at the Scientific Committee for Antarctic Research (SCAR). Open science online conference 2020.
- **Constable A**. Co-Convenor, Marine Ecosystem Assessment for the Southern Ocean. A program of the IMBeR Program Integrating Climate and Ecosystem Dynamics of the Southern Ocean.
- Blanchard J, Audzijonyte A & Novaglio C. Size spectrum models for aquatic ecosystems" International Symposium 11th February 2020
- **Melbourne-Thomas, J**. Climate research and mitigation discussion panel. Tasmanian Climate Symposium. Hobart, Tasmania, October 2020.
- MacLeod C. International Seaweed Symposium 2022 Organising Committee

KEYNOTE AND INVITED SPEAKERS

- **Fulton EA**. Keynote speaker, Australian Society for Fish Biology 2020 Annual General Meeting (in lieu of conference)
- **Fulton EA**. Keynote speaker, EU H2020 COMFORT quantifying safe operating spaces with respect to tipping points, September 2020.
- **Layton C**. Invited speaker, "The feasibility and first steps of restoring Australia's disappearing giant kelp forests". International Marine Conservation Congress special session on Marine and Coastal Restoration
- **McCormack P**. Invited speaker, "Creating a Culture of Learning: Applying Insights from Criminal Law to Species Extinctions". International conference on Species Extinctions, Online, 3-4 December 2020.
- Melbourne-Thomas J. Keynote speaker, "Tasmania's Future Climate". Tourism Industry Council Tasmania State Conference. Hobart, Tasmania, November 2020.
- Pecl G. Keynote speaker, UN Ocean Decade/ Youth Summit 2020, December 2020.
- **Vince J**. Keynote speaker, "Marine spatial planning in Australia: Lessons and Insights". International workshop on Marine Spatial Planning (webex). Si-Wan College, National Sun Yat-sen University, Kaohsiung City, Taiwan, 18 November, 2020

GENERAL PRESENTATIONS

- Alexander K. Certifiable: how do certification schemes define sustainable aquaculture? CMS twitter Conference, 20th May.
- **Briton F**, Thébaud O, **Little LR**, Macher C, Gardner C, Merzeréaud M, Le Grand C, Fifas S, Mobsby D. Providing integrated total catch advice for the management of mixed fisheries with an eco-viability approach. French Association of Environmental and Resources Economists, 10-11 September 2020, Online.
- **Constable A**. Unpacking climate risk for managing futures: what processes are needed for engaging with complex science by the generation to be impacted? CMS twitter Conference, 20th May.
- **Farmery A**. Media messages tell us to eat more under-utilised fish to take pressure off stocks are they right? CMS twitter Conference, 20th May.
- **Fullbrook L**. Managing the Blue Economy One Size fits all approaches? CMS twitter Conference, 20th May.
- **Fullbrook L**. Integrated Management One Size Fits All? The 6th International Marine Conservation Congress, 16-28 Aug.



- **Green M**. How can we encourage more collaboration between researchers? CMS twitter Conference, 20th May
- **Goldsworthy L**. Finding conservation in the Convention on the Conservation of Antarctic Marine Living Resources. CMS twitter Conference, 20th May.
- **Goldsworthy L**. Implications of climate change on ccamlr & Does CCAMLR use Best available science. SCAR 2020 online
- Kelly R. Citizen science for marine conservation. CMS twitter Conference, 20th May.
- **Kelly R**. Curious Climate: Public-powered science communication. CMS twitter Conference, 20th May.
- Marx K. A community-shaped hole: public engagement, policy, and Australia's Antarctic gateway, SCAR-CONMAP Conference August 2020
- McClean N, **van Putten I**, **Sbrocchi C**, Chin A. Human-shark interactions: exploring beachgoer behaviour and risk. CMS twitter Conference, 20th May.



- Melbourne-Thomas J. From penguins to policy: science and decision making for Southern Ocean ecosystems. CMS twitter Conference, 20th May.
- **Mossop D**. Assembling a multi-discipline research team to deliver public-powered scientific engagement on Climate Change. CMS twitter Conference, 20th May.
- **Nash K**. To Achieve a Sustainable Blue Future, Progress Assessments Must Include Interdependencies between the Sustainable Development Goals. CMS twitter Conference, 20th May.
- **Pecl G**. Future Seas 2030: pathways to sustainability. CMS twitter Conference, 20th May.
- **Puskic P**. Ingested plastic and trace element concentrations in Short-tailed Shearwaters (*Ardenna tenuirostris*). CMS twitter Conference, 20th May.
- **Serra-Gonçalves C**. Assessing the effectiveness of Individual marine debris mitigation strategies. CMS twitter Conference, 20th May.
- Serra-Gonçalves C, Lavers L, Tait H, Smith W, Fischer A & Bond A. (oral presentation) Is MARPOL Annex V effective at reducing marine debris on Australian beaches? The 6th International Marine Conservation Congress, 16-28 Aug.
- Serra-Gonçalves C, Lavers L & Bond A. (poster) Global review of beach debris monitoring and future recommendations: Are we speaking the same language? The 6th International Marine Conservation Congress, 16-28 Aug.
- **Trebilco R**, Hunter C, **Fischer M**, **Hobday A** & Evans K. 2021 State of the Australian Marine Environment: a seascape of change. Symposium "Our National State of the Environment – key issues during a time of change" at the 2020 Ecological Society of Australia meeting.
- **Willis K**. Changes in municipal strategies to curb non-compliant behaviour: a case study of waste management. CMS twitter Conference, 20th May.
- **Wood G**. Sustainable Freedom. Ends of Autonomy Colloquium co-hosted by Monash University and the University of Warwick, Dec 2020.



INVITED SPEAKERS

- **Bossi L**. Presented the talk "COVID-19 lockdown, a time for existential reflection". Festival of Urbanism, in Let's Get Thinking, sponsored by the Henry Halloran Trust, The University of Sydney. November, 2020.
- **Cvitanovic C**. Presented the talk "A different 'type' of scientist for a different 'type' of science". Science-policy-society interactions in ecosystems-based marine resource management webinar, organised by MEDPan.
- **Layton C**. Presented the talk "The feasibility and future of restoring Tasmania's disappearing giant kelp forests". James Cook University, Fisheries & Aquaculture.
- McCormack P. Expert presentation about the independent review of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) review for the Student Environment and Animal Law Society (SEALS), Hobart, February 2020.
- **McCormack P**. Invited presentation at University of Queensland workshop on "Ecosystems Services, Ecological Restoration Law and Climate Change", Brisbane, 2-3 March 2020.

GENERAL PRESENTATIONS AND WORKSHOPS

- **Audzijonyte A**. "Human impacts on coastal fish size diversity". UTAS "Island of Ideas" public lecture. https://www.youtube.com/watch?v=s4BmvwE50Kc&t=1902s
- Audzijonyte A. Short video about my Pew Fellowship in Marine Conservation 2020 project. https://vimeo. com/396407281
- Audzijonyte A. Short video explaining the study about temperature effects on fish size. https://vimeo. com/404576159
- **Blanchard J**. Workshop on comparison of size spectrum models Feb 12-15th 2020, included several international visitors and remote participants.
- Blanchard J. Cross-sectoral ISIMIP (Inter Sectoral Impact Model Intercomparison Project) online workshop 2020 "Towards FishMIP 2021".



- Briton F, Thébaud O, Little LR, Macher C, Gardner C, Merzeréaud M, Le Grand C, Fifas S, Mobsby D. The eco-viability approach for integrated TAC advice in mixed fisheries. ICES Working Group for Mixed Fisheries Advice Methodology (WGMIXFISH-METH), 22-26 June 2020.
- **Fischer M**. Reconciliation Week CSIRO Towards Indigenous Science Excellence Presentation.
- **Green M**. "Using eDNA to Reconstruct Fisheries Landings". JCU Centre for Sustainable Tropical Fisheries and Aquaculture.
- Grover I, **Hatton MacDonald D**, **Tinch D**. The value of managing Tasmanian Rock Lobster population. Australian Agricultural Resource Economics presentations, 14 February 2020.
- **Goldsworthy L**. "Finding the 'conservation' in CCAMLR: Is CCAMLR a 'conservation' regime or just another fisheries body?", Marine Social Science Network Seminar Series, 23 September 2020.
- Melbourne-Thomas J. 2020. The health of the planet panel event, Australian Institute of International Affairs, online.
- **Nash K**. Zoom Seminar for the ARC Centre Excellence for Coral Reef Studies on her research.
- Nash K. Zoom Seminar for the Future Earth Australia Early Career Researcher and Practitioner Webinar Series: Oceans and Coasts discussing interdisciplinary marine research and tips on doing interdisciplinary marine science for ECRs.
- Novaglio C, Melbourne-Thomas J & Bindoff N. "Links between IPCC science and responses identified through the CMS Future Seas project". Presented as part of the UTAS Global Climate Change Week (online), UTAS public event, 2020.
- **Pitt C**., Seth A, McCann C & Burke S. 'Wellbeing in a changing climate', Panel discussion as a part of Global Climate Change Week in October 2020. https://www.youtube.com/watch?v=rXIYveVg_ ms&feature=youtu.be



- Richardson BJ. "The Art and Aesthetics of Environmental Justice", XR Social Justice, Ecological Justice and Patriarchy Talks, online, 23 September 2020.
- **Richardson BJ**, "Natural Beauty: Can It Save Nature and Ourselves?", XR Regenerative Culture Dialogues, online, 24 April 2020.
- **Richardson BJ**, "Protesting Against Climate Breakdown: New Legal Options", public lecture, University of Tasmania, 10 March 2020.
- Sainsbury K. Several presentations on multispecies fisheries assessment and management in Vietnam and Thailand.

- **Sainsbury K**. Presentation to Australian Abalone Council on research directions.
- Sainsbury K. Several presentations to explain the new SA abalone harvest strategy.
- **Sbrocchi C**. "Emerging ideas for integrating concepts of legitimacy with fisheries management", Marine Social Science Network Seminar Series, 22nd July 2020.

	Overarching Drivers	Approaches, eg ESD, EBFM
	Fishery	Success Goals/Objectives Governance Arrangements
	TISHCTY	Management System
	Harvest Strategy	Management Objectives Reference points/limits/trigger
		Control rules

- **Spanou E**. "Valuing Marine and Coastal Ecosystem Services", Economic Society of Australia (Tasmania Branch). 28th May 2020.
- **van Putten EI**. "Influencing stakeholders with influence collaboration in conservation programs". The 5th Australian Marine Turtle Symposium.
- **van Putten El**. "Shifting focus: The socio economic impacts of certification", Presentation to the Marine Stewardship Council.
- **van Putten EI**. Presentation and training to PNG partner NGOs around governance mapping in the context of changing ecosystem services.

COMMITTEES, WORKING GROUPS, WORKSHOPS, PANELS & NETWORKS

- Alexander K. Marine Social Sciences Network International Officer.
- Alexander K. ICES Working Group on the Social and Economic Dimensions of Aquaculture.
- Audzijonyte A. Member of the international ICES/PICES working group "Working Group on Impacts of Warming on Growth Rates and Fisheries Yields".



Blanchard J & **Fulton EA** National Socio-Environmental Synthesis Center (SESYNC) USA working group on Biodiversity and Ecosystem Function (improving modelling to support policy makers).



- **Blanchard J**. Elected Overall Lead of The Fisheries and Marine Ecosystem Model Intercomparison Project (Fish-MIP).
- **Blanchard J**. Steering Group: UK Biotechnology and Biological Sciences Research Council's 'Transforming food systems' \$12 million consortium.
- **Blanchard J**. Advisory Board: "Ecocentric management for sustainable fisheries and healthy marine ecosystems" (EcoScope) EU H2020 BG-10-2020.
- **Blanchard J**. Advisory Board for the Coupled Model Intercomparison Project Phase 6 (CMIP6) "Vulnerability, Impacts, Adaptation and Climate Services" (VIACS).
- Blanchard J. Editorships of Phil Trans Roy Soc B and Global Change Biology.
- **Constable A**. Co-chair, Southern Ocean Observing System. A joint program of SCAR and SCOR.
- **Constable A**. Lead Author, Chapter 17 Decision Making Options for Managing Risk. IPCC Working Group II. Assessment Review 6.
- **Constable A**. Co-Lead (equivalent to co-ordinating lead author), Cross Chapter Paper 6: Polar Regions. IPCC Working Group II. Assessment Review 6.
- **Constable A**. Author team, Summary for Policy Makers, IPCC Working Group II. Assessment Review 6.
- **Cottrell R**. NCEAS Food System Sustainability and Impacts Working Group. National Center for Ecological Analysis and Synthesis, University of California Santa Barbara, USA.
- **Cottrell R**. The Blue Food Assessment a joint initiative of the Stanford Center for Ocean Solutions, Center on Food Security and the Environment, and the Stockholm Resilience Centre.
- **Cvitanovic C**. Organising Committee Member, the Interdisciplinary Marine Early Career Network (IMECaN).

- **Cvitanovic C.** Advisory Board Member, MarXiv (based in the US and promotes open access marine science via the development of a pre-print repository).
- **Cvitanovic C**. Editorial Board member for Reviews in Fish Biology and Fisheries.
- **Cvitanovic C**. Editorial Board Member for Socio-ecological Practice Research.
- **Cvitanovic C**. Special Topic Editor Frontiers in Marine Science.
- **Cottrell R**. Invited participant. National Academies Workshop on Progress, Challenges, and Opportunities for Sustainability Science 2020.
- **Fulton EA**. (co-chair), **Hobday A** & **Pecl G** (members) of working group on Future Earth Australia: Sustainable Oceans and Coasts Ten Year Strategy.
- **Fulton EA** Asia Pacific working group of the International Energy Agency (IEA) Ocean Energy Systems (OES) Environmental program.
- **Fulton EA** Adviser to a review of management systems for fisheries of small pelagic fisheries. Chilean project FIPA 2019-17.
- **Fulton EA** Scientific Advisory Committee for the EU funded Humboldt Tipping Points project.
- **Fulton EA** Scientific Advisory Committee for the EU funded COMFORT research program Our common future ocean in the Earth System.
- **Hobday A**. Editorial Board of Marine Ecology Progress Series, Fisheries Oceanography, and Global Change Biology.
- **Hobday A**. IMBeR Steering Committee.
- **Layton C**. Invited member, The Nature Conservancy, Global Kelp Restoration Workshop.
- **Layton C**. Invited author, The Nature Conservancy, Global Kelp Restoration Guidebook.
- MacLeod C. Derwent Estuary Program (Director) supporting better linkages with UTAS and strategic funding opportunities.
- MacLeod C. Australian Sustainable Seaweed Alliance (ASSA) (Director) Seeking opportunities to develop ASSA and support IMAS strategic planning for seaweed industry.
- MacLeod C. IDEA Committee (Member) Personal interest in supporting diversity and equity, was one of the founding members.
- MacLeod C. TasAMSA (Treasurer) one of few IMAS participants, and only senior academic member of committee. Hoping to mentor back to regular committee member.
- MacLeod C. Aquaculture Stewardship Council (ASC) Technical Working Group part of team reviewing international standards for ASC wrt environmental monitoring of aquaculture.
- MacLeod C. FRDC Tas Marine Atlas Steering Committee
- MacLeod C. FRDC Storm Bay Steering Committee
- MacLeod C. Marine Bioproducts CRC Executive/ Bid team
- MacLeod C. Subject Editor Aquaculture Environmental Interactions; Review Editor Sustainability; Frontiers in n Marine Science and Frontiers in Ecology and Evolution (Marine Ecosystem Ecology)

- Marx K. Association of Polar Early Career Scientists (APECS) Oceania Secretary.
- Marx K. Scientific Committee on Antarctic Research (SCAR) Antarctic COVID-19 Research Project member.
- **McCormack P**. Review Editor new section of Frontiers in Climate (Law and Policy).
- McCormack P. Governance Board of Natural Resource Management (NRM) South
- McCormack P. Editorial Board of the Australian Environment Review.
- Melbourne-Thomas J. Careers in Polar Research. Invited Keynote. Association for Polar Early Career Researchers international workshop, online, 2020.
- Melbourne-Thomas J. National Committee for Antarctic Research (NCAR) member, Australian Academy of Science, 2020
- Melbourne-Thomas J. Rhodes Scholarship Selection Committee for Tasmania, member, 2020
- Nash K and Blanchard J. Global Food Systems Working Group NCEAS, California
- **Nash K**. Tasmania Ocean and Coastal Sustainability Workshop, as part of Future Earth Australia and the Australian Academy of Science's initiative to produce a ten year national strategy for oceans and coasts.
- **Novaglio C**. Elected coordinator for global models of The Fisheries and Marine Ecosystem Model Intercomparison Project
- **Pecl G** & **Fulton EA**. The National Center for Ecological Analysis and Synthesis (NCEAS) 2020 working group on Operationalizing climate resilience in marine fisheries management.
- **Pecl GT**. Editorial boards for Ecography, Reviews in Fish Biology & Fisheries, and Frontiers in Marine Science
- **Pecl GT**. Lead Author Chapter 11 Australasia. IPCC Working Group II. Assessment Review 6.
- **Pecl GT**. Honorary member of the Indigenous Peoples' and Community Conserved Territories and Areas Consortium (ICCAs)
- **Pecl GT**. aKIDemic Life Advisory Board https://akidemiclife.com/
- Pecl GT. Ocean Visions Summit leadership group https://www.oceanvisions.org/summit-2021
- **Puskic P**. IMAS Inclusion, Equity, Diversity and Acceptance committee.
- **Puskic P**. IMAS Student Rep E&B.
- Puskic P. UTAS Ally Leadership committee
- **Puskic P**. UTAS Plastics Minimisation working group.
- **Puskic P**. ECOP UN Decade of Ocean Science working group Youth Engagement.
- Puskic P. ECOP UN Decade of Ocean Science working group Corporate Sustainability.
- Puskic P. Queers In Science TAS organising committee.
- **Rakotoarisoa P**. Australian Political Studies Association.
- **Rakotoarisoa P**. International Association for Political Science Students.



- **Rakotoarisoa P**. Young Earth System Scientists community.
- **Rakotoarisoa P**. Earth Science Women's Network.
- **Rakotoarisoa P**. Political ecological network.
- **Rakotoarisoa P**. Economic Society of Australia.
- **Rakotoarisoa P**. IMAS Inclusion, Equity, Diversity and Acceptance committee.
- **Rakotoarisoa P**. Ostrom Workshop IU Bloomington Program Affiliates: Natural Resources Governance and Political Economy Programs.
- **Richardson B**. External coordinator, National Legal Circle, Australian Extinction Rebellion.
- **Richardson B**. Member, Tasmanian Independent Science Council.
- **Richardson K**. Contributing member of the GESAMP (Group of Experts on the Scientific Aspects of Marine Environmental Protection) Working Group 43 on Sea-based Sources of Marine Litter.
- **Richardson K**. Coordinator of the Global Ghost Gear Initiative's "Build Evidence Working Group".
- Sainsbury K. Technical Advisory Board of the Marine Stewardship Council.
- **Sainsbury K**. Scientific Advisory Committee of the International Sustainable Seafood Foundation.
- **Sainsbury K**. Statutory Total Allowable Fishing Committee of New South Wales.
- **Sainsbury K**. Independent scientist on the South Rock lobster Management Advisory Committee of South Australia.
- **Trebilco R**. Lead author for the Marine Chapter of the upcoming 2021 Australia State of the Environment Report.
- **Trebilco R**. Member of the National Marine Science Committee Baselines and Monitoring Working Group
- Trebilco R. Associate editor for Frontiers in Marine Science
- **van Putten El**. Scientific Steering Committee Member of the Integrated Marine Biogeochemistry and Ecosystem Research (IMBeR).
- **van Putten El**. Scientific Steering Committee member for the Sustainable Seas National Science Challenge, New Zealand.
- **van Putten El**. Research Advisory Board member for European Union project Climate change and European aquatic RESources (CERES).
- **van Putten EI**. External Advisory Board of the University of Hamburg Cluster of Excellence CLICCS.
- **van Putten EI**. Marine Stewardship Council-POSEIDON Expert Review Panel.

Image credit: Joel Badger

FUNDING

- 1. Alexander K, Lacharite M, MacLeod C, Barrett NS, Hartmann K, Lucieer VL. "Tasmania's Marine Atlas (2021-2023)". FRDC, \$499,646.
- Blanchard J, Cameron D, Halpern B, Carter CG, MacLeod C, Adams LR, Leith PB, Bowman JP, Alexander KA. Optimising feeds to support ecosystem-based aquaculture (2020-2024). ARC Linkage + Industry Partner Biomar Global, \$1,012,000.
- Cohen P and Nash K. "Data innovations to understand the food and nutrition security potential of fisheries" funded by Minderoo, Flourishing Oceans Program. USD 115,235.
- Fidelman P; Head B; Vince JZ; Haward MG, Dutton I; Rissik D. "Mapping and analysis of blue economy policy and legislative arrangements". Blue Economy CRC, \$88,355.
- 5. Fulbrook L. CMS Student Pitch funds, \$2,000.
- Fulton E, Lacharite M, Semmens JM, Lea MA, MacLeod C, D'Alessandro SP, Deegan CM, Hatton MacDonald DA, Haward MG, Wood G, Abdussamie N. "Risks & Opportunities for the Blue Economy" (2020 - 2022) Blue Economy CRC, \$613,462.
- 7. Fischer M, Pecl G, Greeno D, Layton C. Lutruwita Maireener Shells & Climate Change Project, Tasmanian Climate Change Office.

- 8. Hatton MacDonald D. Blue Economy Eol PhD Scholarship - Responses to risk: Blue economy explorations using behavioural economics. Candidate to be announced soon.
- 9. Jayakody D. CMS Student Pitch funds, \$1,500.
- **10. Johnson M**. CMS Student Pitch funds, \$1,500.
- Kelly J, MacLeod C, Main A, Gatenby A. National Seaweed Industry Blueprint Implementation (2020). AgriFutures, \$240,000.
- King MA, Blanchard JL, Boyd PW, Hill NA, Hindell MA, Lea MA, Lucieer VL, McMinn A, Watson CS, Reading AM, Bindoff NL, Bowie AR, Chase Z, Coleman R, Halpin JA, Lannuzel D, Nikurashin M, Phillips HE, Strutton PG, Whittaker J, Williams GD. ARC SRI "Australian Centre of Excellence for Antarctic Science" (2020-2022). ARC, \$20,000,000.
- **13.** Komyakova V, Vince J & Haward M. "Microplastics in the Australian marine environment". NESP, \$50,000.
- **14. Layton C**. Giant kelp restoration and biodiversity (and associated educational material for schools), NRM South and TAS Smart Seafood Partnership.
- **15. McDonald J** & **Cortes Rueda L** will lead the legal and governance components of the project EAStern Tropical Pacific reef fish

on the MOve: biodiversity reorganisation and societal consequences (EASMO) 2021-2023, led by Dr Sonia Bejarano from Leibniz University. Biodiversa, \$943,000.

- **16.** Murray L & Nash K. Internally funded project at Massey University (New Zealand).
- Nash K. "Effects of environmental change on seafood micronutrients: a SE Asian focus". ARC Discovery Early Career Researcher Award.
- Nguyen H-O, Pham T, Tinch DR, Ogier EM, Stoeckl NE, Hatton MacDonald DA. Economic Assessment of Blue Economy (2020). Blue Economy CRC, \$49,396.
- 19. Pecl G, Fudge M & Cullen-Knox C. Research and practice: A Framework for the NSW DPI Marine Estate Strategy. Department of Primary Industries NSW, \$30,000.
- **20.** Puskic P. CMS Student Pitch funds, \$1,500.
- **21. Puskic P**. IMAS Student Support Scheme, \$2,000.
- Sampford C, Rissik D, Dutton I, O'Neill A, Fievez J, Breakey H, Wood G, Lewis M. "Ethics, values and social license in the Blue Economy" (2020 2024). Blue Economy CRC, \$479,981
- 23. Sampford C, Fievez J, Breakey H, Cadman T, Lewis M, Wood G. Integrating Blue Economy Governance Integrity Research (2020). Blue Economy CRC, \$43,749.
- **24. Sainsbury K**. "Practical approaches to assessment and scientific management advice for multi-species multi-gear fisheries". FAO.
- **25. Sainsbury K**. "Expert Working Group on Benchmarks for Ecosystem under EBFM". Lenfest
- **26. Sainsbury K**. "North West Shelf effects of trawling". FRDC-CSIRO.
- **27. Sainsbury K**. "Evaluation of data-limited methods for assessment and management decisions in fisheries". Packard-MSC.

- **28. Sainsbury K**. "Development and evaluation of multi-species harvest strategies in the Southern and Eastern Scalefish and Shark Fishery (SESSF)". FRDC-CSIRO.
- **29. Sainsbury K**. "Indicators for density and biomass of exploitable abalone developing and applying a new approach". FRDC project 2020-065.
- **30.** Spillias S, **Kelly R**, **Cottrell R**. Seaweed aquaculture: Green blue growth in Australia. Future Earth, \$4,000.
- 31. Tinch D, Ogier EM, Yamazaki S, Rust SA, Nichols RL, Spanou E, Pecl GT. Department of Agriculture and Water Resources, Southern Ocean fisheries economics', \$77,146.
- **32. Vince J** was part of the UTAS team that successfully won the bid for Sustainable Communities and Waste Hub for NESP2.
- Wright JT, Hurd CL, MacLeod C, Cossu R, Baldock T, White L, Roediger J, Stringer D, Gutierrez A, Fitton H, Strain EMA. Seaweed Scoping Study (2020). Blue Economy CRC, \$48,459.





oftheyear

Dr Jess Melbourne-Thomas receiving the smanian Australian of the Year, 2020 award.

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- 1. Asta Audzijonyte was awarded the Pew Fellowship in Marine Conservation 2020 for the project: "Harnessing big data and citizen science to understand, predict and protect fish size diversity in coastal ecosystems".
- 2. PhD student Bianca Haas received the 2020 CSIRO NCR Excellence in Industry Engagement Award.
- 3. Beth Fulton was awarded the Beverton medal from the Fisheries Society of the British Isles. The Beverton Medal is awarded in recognition of ground-breaking research and lifelong contribution to the study of fish and fisheries science.
- 4. Beth Fulton, 2020 Distinguished Alumni James Cook University.
- 5. Beth Fulton and Alistair Hobday were named on the 'Clarivate Analytics Highly Cited Researchers' List' for 2020 from the Web of Science. (Beth 4th year in a row, Alistair 2nd year in a row). Beth in the category of Plant and Animal Science and Alistair in the category of cross-field. 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. Fewer than 0.1%, of the world's researchers, across 21 research fields, have earned the exclusive Highly Cited Researcher distinction.
- 6. Curious Climate Tasmania Team: Gretta Pecl, Emily Ogier, Rachel Kelly, David Mossop, Coco Cullen-Knox, Ingrid van Putten - UTAS College of Science & Engineering Commendation.
- 7. Alistair Hobday was recognised in the The Australian Life Sciences & Earth Sciences Australia's research leaders in the field of Marine Sciences and Fisheries. Australia's research field leaders in 30 fields of Life Sciences & Earth Sciences are the researchers with the highest number of citations from papers published in the last five years in the 20 top journals in their field. https://specialreports. theaustralian.com.au/1540291/24/.
- 8. Rachel Kelly was awarded the University of Tasmania Vice-Chancellor's Early Career Research Medal.
- 9. Rachel Kelly, Early Career Researcher UTAS College of Science & Engineering Commendation.

- 10. Rachel Kelly was recognised as one of Australia's top 5 early achievers in Social Science research in The Australian Early Achievers Leaderboard Rising Stars. The Early Achievers Leaderboard lists the five top researchers from Australian universities and research institutions in each of the eight major discipline areas, who are less than 10 years into their career.https://specialreports.theaustralian.com. au/1540291/27/
- 11. Jess Melbourne-Thomas was selected the Tasmanian Australian of the Year, 2020.
- **12. Linda Murray** was awarded the Massey University Early Career Medal in recognition of her research work.
- **13. Kirsty Nash** was one of the 12 women recognised as a "STEM Women Changemaker" by the Australian Academy of Science- these female researchers were chosen because of their knowledge, experience and networks to share their ideas and solutions for gender equity in Australian science, technology, engineering and mathematics (STEM). https://www.science.org.au/news-and-events/news-and-media-releases/meet-our-stem-women-changemakers

Meet our STEM Women Changemakers

January 24, 2020



The winners of the STEM Women Changemakers grant. From L-R: Catherine Royans, Dr Emma Camp, Jerusha Mather, Jessie Panazzolo, Dr Kirsty Nash, Dr Mary McMillan, Professor Tanya M. Smith, Tishiko King, Ruwangi Fernando, Associate Professor Muireann Irish, Dr Momeneh Foroutan, and Dr Marit Kragt

14. PhD student Peter Puskic was nominated for the Top 30 Under 30 Out for Australia (OFA) award.

- **15. Benjamin Richardson** was shortlisted finalist for the Council of Australian Law Deans' 2020 Book Award: for The Art of Environmental Law: Governing with Aesthetics, 2020.
- **16.** PhD student **Catarina Serra-Gonçalve**s was awarded the second prize for best poster presentation at the 6th International Marine Conservation Congress.
- 17. Sean Tracey, Tuna Champions Team UTAS College of Science & Engineering Commendation.

OTHER OUTPUTS

- A paper by **Asta Audzijonyte**, **Julia Blanchard**, **Gretta Pecl** & coauthors 'Fish body sizes change with temperature but not all species shrink with warming', was selected as a cover story in Nature Ecology and Evolution, and attracting lots of interest (Altimetric 190). It was also selected to help celebrate World Ocean Day and International Day of Women and Girls in Science.
- Mibu Fischer was a Mentor/teacher at the CSIRO Indigenous Young Women's STEM Academy Camp.
- The Future Seas, a project led by CMS, was a registered UN Ocean commitment to support acceleration towards Goal 14 Life Below Water. https://oceanconference.un.org/commitments/?id=35402
- Honors student **Dean Greeno** presented his art work made of drifted wood, part of his degree in Bachelor of Fine Arts with Honors, at the Honors Fine Arts exhibit. Dean's project is about cultural connections to the coast and oceans, and he has a particular interest in climate change and potential impacts on Aboriginal cultural heritage.



Pictured L-R: Lola Greeno (mother), Vanessa Greeno (sister), Dean Greeno, Charlyse Greeno (daughter), Rex Greeno (father).

Public Participatory GIS (PPGIS) platform: PhD students **Dimuthu Jayakody** and **Malcolm** Johnson received CMS pitch funding to build a landscape values mapping platform that will allow them to collect spatial data on landscape and seascape values throughout Tasmania for their PhD projects. The platform is now built and about to launch surveys for Malcolm and Di (at tasvalues.com). The platform has been designed to be flexible and allow any researcher or decision-maker who is seeking to collect PPGIS data on landscape and seascape values in relation to such fields of enguiry as management preferences, risk perceptions, and adaptation behaviours, to be able to easily use the platform to carry out their own data collections.

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Art work by Dean Greeno



Public Participatory GIS (PPGIS) app developed by PhD students Dimuthu Jayakody and Malcolm Johnson, and Dr Vanessa Adams to collect spatial data on Tasmanian landscape and seascape values.

- **Cayne Layton** was the 'Seaweed scientist' for New Town & Ogilvie High Schools' seaweed aquaculture programs, and Mountains to Sea Wellington (NZ) marine education program.
- Catriona MacLeod was engaged in developing the project *Marine Bioproducts CRC (MB-CRC)* The primary aim of MB-CRC is to develop Australia's bioresources industry through innovation in advanced manufacturing and high-value product development based on circular economy principles and ensuring sustainable practices and policies to support and develop regional communities.
- Catriona MacLeod was engaged in developing the project *ARC Centre of Excellence for Resilient Aquaculture (CERA)* – This CoE aims to bring together critical research capabilities to address a suite of high level issues which have the potential to limit the development of the Australian industry. These issues relate to future proofing the overall economic, environmental and societal sustainability of the aquaculture industry in Australia, and need to be addressed at a level beyond that of any individual company. Economic sustainability needs to address market competition, import reliance and sovereignty, and labour costs/ efficiency. Environmental sustainability needs to address human induced impacts and interactions, climate change and biosecurity. Societal sustainability needs to consider all of the above and how they interact with consumer/ public expectations and resource use conflicts. This program of research will consider all of these issues in 3 research programs designed to ensure the industry is positioned to i) adapt and evolve, ii) build resilience into our national production and markets and iii) predict and manage risks as they arise.
- Paper led by **Kirsty Nash**, "To Achieve a Sustainable Blue Future, Progress Assessments Must Include Interdependencies between the Sustainable Development Goals", was featured in the World Oceans Day 2020 Ocean Health collection in One Earth.



- Ingrid van Putten and Mibu Fischer paper on Perceptions, Motivations and Practices for Indigenous Engagement in Marine Science in Australia (Hedge et al 2020) was highlighted in the article "Reflections on the first national-scale snapshot of Indigenous engagement in marine science", by Bryony Bennett, published in ECOS, 10th Nov 2020, https://ecos.csiro.au/indigenous-engagement-marine-science/
- Ingrid van Putten lead PI on International Belmont funded collaboration (with Sweden, USA, South Africa, Australia, and Germany) on Negotiating Ocean Conflicts among RIvals for Sustainable and Equitable Solutions (NOCRISES). Presentation delivered to Belmont forum and partner projects.
- **Rob Stephenson** established new collaboration between CSIRO, CMS and the Canadian Future Ocean and Coastal Infrastructure project. The main objective of this project is to re-think the way we design, develop, and manage infrastructures, with an overarching aim to ensure the designs of our future infrastructures are sustainable, safe and inclusive. (FOCI https://oceanfrontierinstitute.com/research/ future-ocean-and-coastal-infrastructures)

PUBLIC OUTREACH

Pictured right: Dr Chloe Lucas presenting about climate change at Howrah primary school.



TALKS

Curious Climate Tasmania - Schools Edition! During Global Climate Change Week, Chloe Lucas led a 'Curious Climate Tasmania Schools Edition' engaging approximately 320 primary and secondary students across 12 school from Ulverstone to Burnie, Launceston and Hobart.

Students posed their burning climate change questions to us, and we found experts to answer them. Questions ranged from 'How do we know that climate change is real?' to 'What are the links between increasing number, frequency and intensity of natural disasters and climate change?' to 'Can you explain the concept of 'climate change' in a really simple way that students could then use to talk to other people in the community about it?'



Expert presenters included scientists from Geography and Spatial Sciences, CMS, Biological Sciences, Education and CSIRO. These presenters visited classes in person or by zoom.

Curious Climate Tasmania participant comments:

"Curious Climate Tasmania – Schools Edition was such a fantastic initiative. We would love to be involved again. The preparation was really thorough, and my students found it really interesting and informative. No suggestions needed really!" Megan Tubb, Teacher at Taroona Primary

"

"Thank you so much for this opportunity for my Geography 3 students. They thoroughly enjoyed the opportunity to able to hear from Stuart and have their questions answered. They took lots of notes and it was excellent exam preparation for them for their upcoming Geography 3 exam in 2 weeks time" Kate Reynolds, Teacher at Ulverstone Secondary College.

"My one word summary of the session would be 'intriguing', because talking about climate change has made me wonder more about it." Emily, Grade 6 student, Howrah Primary.

- **Layton C**. Kelp Forests and Climate Change (and the Great Southern Reef), invited lecture at the Citizens Climate Change Lobby.
- **Layton C**. Help for our kelp? Restoring Tasmania's disappearing giant kelp forests, invited lecture by the Australian Wilderness Society
- **Layton C**. Giant Kelp restoration and farming update, invited lecture at the Kingston Community Hub.
- **Green M**. Science outreach presentation to Tasmanian Mermaids. A discussion about sharks and woman in science
- **Fischer M**. QLD Schools Presentation Aboriginal and Torres Strait Islander Aspirations Program Award Ceremony Presentation.
- Fischer M. QLD Gallery of Modern Art (QAGOMA) 'Water Series' Talk
- Mibu Fischer was a panelist at CSIRO Indigenous STEM Award Presentation.
- Melbourne-Thomas J. 2020. Tackling misinformation panel event, National Science Week, online.
- Panel event (public Q&A) on Diversity in STEMM with **Jess Melbourne-Thomas, Mibu Fischer** and Meredith Nash, State Cinema, 2020.



Special Screening and Q+A DIVERSITY IN STEMM

- Jess Melbourne-Thomas presented at #EachforEqual: International Women's Day Forum 2020, a UTAS public event.
- **Jess Melbourne-Thomas** and Nathan Bindoff presented at Oceans, Ice & Climate Change: An IPCC Update (ONLINE), 2020 UTAS public event.
- **Gretta Pecl** and **Jess Melbourne-Thomas** contributed letters to the climate change communication living project "is this how you feel" which features letters from climate change scientists. https://www.isthishowyoufeel.com/thisis-how-scientists-feel.html
- Pecl G. Guest speaker at PADI Women's Dive Day 2020,
 "Citizen science and marine climate change", 18th July 2020.



Puskic P. Guest presenter at Queer in STEMM event. Date: 20 Aug 2020



-) **Puskic P.** Year 13 career expo. Joining Tasmania's thriving environmental movement.
- Puskic P. Instagram live with Spiral Fitness and Eco-conscious living.)
- Puskic P & Reimer T. National coming out day QUEER in STEM in TAS.
- Talk by **Gretta Pecl** with music by Michael Fortescue. "As Tasmania's waters warm, what happens to our marine species? Sci Art Walks - Baker Street Festival. https://www.sciartwalks.com.au/wineglass-baywalk. Aug 2020





Talk by Professor Gretta Pecl Music by Michael Fortescue

Learn More & Listen

MEDIA

- Audzijonyte A. "Behind the paper: Do fish really get smaller with warming?". Ecology and Evolution post, 7th April 2020. https:// natureecoevocommunity.nature.com/ posts/65022-do-fishes-really-get-smallerwith-warming
- **Asta Audzijonyte** highlighted in an article "Tassie researchers shock fish discovery", by Sally Glaetzer, The Mercury Sunday Edition. https://astaaudzi.files.wordpress. com/2020/11/sundaytas.jpg
-) Asta Audzijonyte recognised in the Examiner for her PEW fellowship. "Tasmanian scientist awarded prestigious fellowship", by Ryan Young, 26th March 2020. https://www. examiner.com.au/story/6698923/tasmanianscientist-awarded-prestigious-fellowship/
- Asta Audzijonyte on 7News about her PEW fellowship, 27th March 2020.
- Asta Audzijonyte was interviewed in ABC radio program Country Hour on temperature effects on fish size, 7th April 2020.



Tassie researchers' shock fish discovery



IF THERE IS ONE THING THAT MAITTERS TO A

- **Narissa Bax** interviewed in an article "In Antarctica, The #MeToo Movement Faces Unique Hurdles", BuzzFeed News, 18 Feb 2020.
- CMS graduates Larelle Bossi and Maree Fudge on The Mercury, 16th Dec 2020.



Fillowing ceremonies in Burnie and Launceston, the University of Tasmania summer graduations started in Hobart on Tuesday in the Federation Concert Hall and will continue until Saturday. To ensure all ceremonies comply with COVID-safe requirements, the university is holding a larger number of smaller ceremonies. Lauren Wiggins from Midway Point graduated with a bachelor of education in March but was unable to attend a ceremony in person until Tuesday. The 24-year-old has been teaching at the Sorell School and been offered a permanent position. "It's been a crazy year – I'm glad we came out on top and school finishes in two days so I'm looking forward to end-of-year celebrations."

- **Constable A**. Commentary to Nina Gallo for her book "Antarctica" published by Australian Geographic. 2020.
- The Future Seas Project highlighted in a CSIRO media cover "A unique collaboration explores the future of our oceans", by Ruth Dawkins, 8th June 2020. https://ecos.csiro.au/future-seas-2030/
- Dean Greeno in the video interview "Growing-up", shares his reflection on the Cataract Gorge in Launceston as a place that connects him with his past. Tasmanian Government, January 2020. https://cataractgorge.theorb.tas.gov.au/view/ reflection/growing-up.



Dean Greeno video interview "Growing-up".

Denise Hardesty contributed to the article "Asia's plastic-polluted rivers pose a problem for Australia. So scientists are turning to drones", by Amy Bainbridge. ABC News, 31 May 2020. https://www.abc.net. au/news/2020-05-31/scientists-use-drones-to-find-plastic-in-mekong-river/12038274



- **Denise Hardesty** highlighted in article "Hidden Beneath the Ocean's Surface, Nearly 16 Million Tons of Microplastic", by Tiffany May. The New York Times, 7 October 2020. https://www.nytimes. com/2020/10/07/world/australia/microplastics-ocean-floor.html
- **Cayne Layton** was featured in media article "Where I work: Flying through an undersea 'stained-glass window'", by Kendall Powell, Nature, 5 Oct 2020. https://www.nature.com/articles/d41586-020-02802-7
- **Cayne Layton's** research was featured in media article "The Lost World", by Dan Down, Wilderness Journal Issue #3. https://journal.wilderness.org.au/issue-003/
- **Cayne Layton's** research was featured in media article "Can the forests of the world's oceans contribute to alleviating the climate crisis?" by Emma Bryce, Ensia, 24 June 2020. https://ensia.com/features/kelp-carbon-sequestration-climate-mitigation/
- **Cayne Layton's** research was featured in media article "Restoring the giants of the sea", by Katherine Johnson, Forty South Tasmania, 9 Dec 2020. https://www.fortysouth.com.au/science/restoring-the-giants-of-the-sea
- **Cayne Layton's** research was featured in media article "Recreational fishers join the fight for endangered giant kelp", by Miki Perkins, The Sydney Morning Herald, 18 April 2020. https://www.smh.com.au/national/recreational-fishers-join-the-fight-for-endangered-giant-kelp-20200418-p54l15.html
- **Cayne Layton** was interviewed in ABC radio program Breakfast, "The lost giant kelp forests of Tasmania may regrow faster than you think". https://www.abc.net.au/radio/hobart/programs/breakfast/kelp-forst-regrow-cayne-layton/12433008
- Cayne Layton research was feature by ABS News. https://www.youtube.com/watch?v=0h4Lw531PlY
- Mary-Anne Lea highlighted in article "Antarctic fur seal whiskers an 'archival clock' that is key in Southern Ocean research", by Rachel Edwards. ABC News, 4 Sep 2020. https://www.abc.net.au/news/2020-09-04/antarctic-fur-seal-diet-southern-ocean-krill-tasmania/12621924
- Mary-Anne Lea's work was featured in media article "Where I work: Alone where seals bark in the mist", by Kendall Powell, Nature, 27 January 2020. https://www.nature.com/articles/d41586-020-00179-1
- Mary Mackay and Maree Fudge were highlighted in the article "How social science is continuing to change and improve marine ecosystem conservation and management: Part I". The Skimmer on Marine Ecosystems & Management, 15th Nov 2020, https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/how-social-science-continuing-change-and-improve
- **Catriona MacLeod** was interviewed by Chris Brown for Agrifutures Podcast, 9th October 2020.
- **Catriona MacLeod** was interviewed in ABC Rural (Country Hour) about the project Seaweed Solutions CRC, 22nd July 2020.
- Kirsty Nash's research was highlighted in the Guardian. "Marine food webs could be radically altered by heating of oceans, scientists warn", by Graham Readfearn, 14 Aug 2020. https://www.theguardian. com/environment/2020/aug/13/marine-food-webs-could-be-radically-altered-by-heating-of-oceans-scientists-warn
- **Nash K**. Australian Coral Reef Society Newsletter Article in 2020 edition of their newsletter: A coronavirus survival guide for you and your family. https://australiancoralreefsociety.org/library/ reefinreview/



- Gretta Pecl's work on Redmap was featured in the Australian Ocean documentary "Australia's Ocean Odyssey: A journey down to the east Australian current", 11th June 2020. https://iview.abc.net.au/video/DC1809H001S00
- Pecl G., "How climate change is leading to 'a redistribution of life on Earth' | CBC Radio, Posted: 25th Jul 2020. https://www.cbc.ca/radio/whatonearth/how-climate-change-is-leading-to-a-redistribution-of-life-on-earth-1.5661871
- **Gretta Pecl's** research highlighted in the article "Who Belongs here?", by Jane Rawson, Meanjin, Summer 2020. https://meanjin.com.au/essays/who-belongs-here/
- **Gretta Pecl's** papers on species redistribution highlighted in the article "Should plants and animals that relocate because of climate change be considered invasive?", by Jenny Morber, ENSIA, 21st July 2020. https://ensia.com/features/climate-change-nonnative-invasive-species/
- **Gretta Pecl** and **Kirsty Nash** were interviewed by ABC Hobart about Future Seas project, October 2020.
- PhD student **Kelsey Richardson** contributed input/background on ghost gear to article on the issue in Hakai magazine: "How to Exorcise the Ghosts of Crab Traps Past". https://www.hakaimagazine.com/article-short/how-to-exorcise-the-ghosts-of-crab-traps-past/
- CMS PhD student **Danielle Smith** provided comments to an article in PopSci: Marine parks need to move along with the animals they're protecting. https://www.popsci.com/story/environment/mobile-ocean-parks-protect-species/
- **Joseph Wenta** was interviewed on ABC Newcastle on legal dimensions of coastal erosion, 'What's the Law when it comes to Coastal Erosion?', ABC Newcastle, Saturday 18 July 2020

COVID CMS STUDENT SURVEY

As we started collating this annual report, it really struck us that our 2020 report so far looked very much like any other year – full of lots of amazing achievements from talented and hard-working researchers and students. However, we felt it important to acknowledge that 2020 was anything but a 'normal' year, especially for students undertaking their PhD's. We asked our students to tell us what their year was like in an anonymous survey, and this is what they said:

- Almost half had close friends or family infected with COVID
- Almost half had to self-isolate or quarantine at some stage



65% had project FIELD WORK impacted in some way

60% had project communications with collaborators affected moderately to a great deal



65% had moderate to major impacts on project deliverables



50% had some kind of salary or stipend funding stress (25% 'severe')



76% had to adapt their project in some way



71% had travel to see family (or family to come here) disrupted

The CMS response:

- CMS did helpful things (eg book club and virtual morning teas), but not too many things (too many and people feel overwhelmed)
- CMS communication during pandemic was consistent & reassuring
- Students felt we were trying to understand their unique circumstances & helping where we could



To what degree have you been affected in terms of feeling isolated?



What else did people want to share with us?

- Some people found a 'flip side' in reconnecting with nature
- Feeling helpless was common, with a mix of feeling fortunate about being safe in Tasmania but worried about overseas family & friends
- Work/Life balance was EXTRA hard when trapped at home
- Anxiety made it really difficult to concentrate
- The financial impacts were really hard to address

There was less of a cohort feeling & fewer social connections – the COVID situation made people realize how important in person interactions and collaborations are to help them stay energized and inspired.

CMS EVENTS

CMS Summer School

CMS ran its inaugural Interdisciplinary Summer School in Hobart in February 2020 over a week and was attended by 27 students from different parts of Australia, Taiwan, USA, Finland and France.

The theme of the summer school was *Interdisciplinary Skills for Equitable Climate Adaptation in Socioecological Systems*. The summer school was coordinated by Prof Gretta Pecl and Dr Mady Green, and convened by Dr Rachel Kelly. It was delivered via a series of lectures, skill development sessions, group project work and a field trip. The central activity of the course was developing a collaborative interdisciplinary project proposal in response to a real-world problem identified by representatives from various marine stakeholder groups including the state government, industry and NGO's. The lectures were taught by researchers from CMS, UTAS and CSIRO: Prof Gretta Pecl, Dr Beth Fulton, Dr Karen Alexander, Dr Maree Fudge, Dr Madi Green, Dr Alistair Hobday, Dr Rachel Kelly, Dr Chloe Lucas, Dr Mary Mackay, Dr Jess Melbourne-Thomas, Dr Kirsty Nash, Dr Camilla Novaglio, Dr Emily Ogier, Dr Geoff Syme, Dr Rowan Trebilco, Dr Ingrid van Putten, and invited lecturers Prof Eddie Allison (Nippon Foundation Ocean Nexus and Worldfish), Dr Paige Kelly (IMAS), Dr Vicki Martin (Cornell Lab of Ornithology), Dr Claire Smith (Doctors for the Environment), Dr Rob Stephenson (Canadian Department of Fisheries and Oceans), Dr Ian Dutton (Tasmanian Department of Primary Industries, Parks, Wildlife and Environment), Dr Phillipa Cohen (Small Scale Fisheries Research Flagship of WorldFish & the CGIAR Research Program on Aquatic Agricultural Systems), Prof Martin Exel (SeaBOS), Alistair Graham (WWF).



HOW TO PARTICIPATE CMS Twitter Conference 20 May 2020 - 09:30 am (AEST)

📲 🖝 Centre For Marine Socioecology | Annual Report 2019

#BuildANewAnthropocene



ᡗ Latest Twitter





CMS Twitter conference

CMS hosted a Twitter Conference on the 20th of May showcasing 16 presenters from CMS, including the CMS director Gretta Pecl, ECRs and students. The topic of the conference was Interdisciplinary Science to Underpin a Sustainable Anthropocene, following the hashtag #BuildANewAnthropocene (look up this hashtag on twitter to see tweets and highlights). Great response with over 800 retweets and interactions online!

Workshops, seminars and training sessions

- **Constable A**. Prioritising science, policy and decision-making in managing socio-ecological issues: context is everything! CMS Knowledge Production theme: science-policy seminar, 8th September 2020 (online).
- Leith P. Bridging research, policy and practice for sustainability. CMS Knowledge Production theme: science-policy seminar, 5th May 2020 (online).
- Nash K. Intersectionality Workshop, 9 July 2020, attended by 13 members from CMS and IMAS (online).
- Indigenous Cultural Awareness Courses for CMS students and members from Your Mob Learning.

Social events

CMS in isolation – Zoom morning teas

During the COVID lockdown, CMS organised weekly morning teas, and also a 'Book Club' group to keep people connected and supported.

CMS Wear It Purple Day morning tea, to acknowledge LGBTQIA+ young people and show that they have the right to be proud of themselves. It is about creating safe spaces in schools, universities, workplaces and public spaces to show LGBTIQ+ young people that they are seen and supported.





GRADUATED STUDENTS



Angela Abolhassani (graduated in absentia)



Richard Cottrell (graduated in absentia).



Joseph Wenta



Dean Greeno

Florence Britton, who successfully defended her cotutelle thesis in France on 16 Dec 2020.



PhD student Florence Britton (top right) defending her PhD to the evaluation panel conformed by:Martin Quaas (Germany), Anna Rindorf (Denmark), Rob Stephenson (Canada), Matthieu Leprince (France), , and Sarah Jennings (Australia); and supervisors Caleb Gardner (Australia), Rich Little (Australia), Olivier Thébaud (France) and Claire Macher (France).

Larelle Bossi and Maree Fudge



From left to right Dr Miranda Nieboer, Prof Julia Jabour and CMS graduates Dr Larelle Bossi and Dr Maree Fudge



SUBMITTED THESES

Coco Cullen-Knox (thesis accepted with no corrections required). Thesis: "Transnational Environmental Campaigns in the Australia-Asian Region: The Case of Seafood, Fisheries and Target Markets". Supervisors: Libby Lester, Emily Ogier and Aysha Fleming.

Hannah Fogarty. Thesis: "Climate ready: identifying adaptation preparedness in Australia's State fisheries". Supervisors: Gretta Pecl, Chris Cvitanovic, Alistair Hobday.

Bianca Haas. Thesis: Regional Fisheries Management Organizations and Sustainable Development Goal 14: Opportunities and Challenges. Supervisors: Marcus Haward, Jeffrey McGee and Aysha Fleming.

Sheryl Hamilton (thesis accepted with no corrections required). Thesis: "Assessment, evaluation and mitigation of marine mammal bycatch in commercial fishing gear". Supervisors: Marcus **Haward, M**ary-Anne Lea, Barry Baker and Aleks Terauds.

Elisavet Spanou (thesis accepted). Thesis: "Deliberating marine values: Valuating the non-commercial economic value of marine ecosystem services". Supervisors: Dugald Tinch, Emily Ogier and Darla Hatton MacDonald

Kathy Willis. Thesis: The successful management and reduction of plastic pollution by municipal governments. Supervisors: Joanna Vince, Denise Hardesty, Chris Wilcox and Marcus Haward.

VISITORS



FROM TOP LEFT

Prof **Eddie Allison**, Research Director, Nippon Foundation Ocean Nexus & Principal Scientist, Worldfish. Guest lecturer at CMS Summer School.

PhD student **David Benoit**, University of Toronto (Canada). Attended the Size spectrum Symposium and Workshop.

PhD student **Fanny Châles**, University of Western Brittany (France). Attended the CMS summer school.

PhD student **I-Wen Chen (Ivory)**, Institution of Life Sciences, National Cheng Kung University (Taiwan). Attended the CMS summer school.

Dr **Phillipa Cohen**, Research Program Leader Small Scale Fisheries Research Flagship of WorldFish & the CGIAR Research Program on Aquatic Agricultural Systems. Guest lecturer at CMS Summer School.

Dr **Samik Datta**, NIWA (New Zealand). Attended the Size spectrum Symposium and Workshop.

Dr **Gustav Delius**, University of York (UK). Attended the Size spectrum Symposium and Workshop.

PhD student **Kate Dodds**, Macquarie University, Sydney (Australia). Attended the CMS summer school.

PhD student **Ruby Grantham**, ARC CoE for Coral Reef Studies at James Cook University (Australia). Attended the CMS summer school.

Dr **Ellycia Harrould-Kolieb**, University of Melbourne (Australia). Attended the CMS summer school.

PhD student **Kim Hunnam**, Research Institute for the Environment & Livelihoods, Charles Darwin University (Australia). Attended the CMS summer school.

PhD student **Tung Yao Hsu**, Institute of Ocean Technology and Marine Affairs, National Cheng Kung University (Taiwan). Attended the CMS summer school.



PhD student **Shin-Hung Jiang**, Department of Life Sciences, National Cheng Kung University (Taiwan). Attended the CMS summer school.

PhD student **Laura Kaikkonen**, University of Helsinki (Finland). Attended the CMS summer school and was working with Ingrid van Putten.

Dr **Vicki Martin**, Cornell Lab of Ornithology (USA). Guest lecturer at CMS Summer School and Springboard Fellow.

PhD student **Clara Obregon Lafuente**, Murdoch University, Western Australia (Australia). Attended the CMS summer school and was working with Dr Ingrid van Putten.

PhD student **Lansing Perng**, University of Hawaii at Manoa (USA). Attended the CMS summer school.

Dr **Jon Reum**, NOAA (USA). Attended the Size spectrum Symposium and Workshop.

Dr **Michael Spence**, Cefas (UK). Attended the Size spectrum Symposium and Workshop.

Dr **Rob Stephenson**, Canadian Department of Fisheries and Oceans (Canada), visited CSIRO and CMS in Feb/March 2021 to continue collaborations on Integrated Management, Foresighting, and Future Seas projects; and was also a guest lecturer at CMS Summer School.

PhD student **Hsiao Yi Ting**, International program in climate change and sustainable development, National Taiwan University (Taiwan). Attended the CMS summer school.

Masters student **Samuel Tsao**, Department of Atmospheric Science, National Taiwan University (Taiwan). Attended the CMS summer school.

Assoc Prof **Crow White**, Center for Coastal Marine Sciences, California Polytechnic State University (USA), visited from January to May and was working with Assoc Prof Julia Blanchard. Assoc Prof White also gave the seminar "Tradeoff Analysis for Balancing Multiple Objectives in Ocean Management" at IMAS.

FUTURE PROJECTS & EVENTS FOR 2021

- Asta Audzijonyte is planning to start a citizen science initiative to involve recreational fishers to photograph and post fish sizes in their catches.
- Narissa Bax will be a Guest speaker on Talk Nerdy podcast on July 7th 2021.
- Julia Blanchard will be teaching the FishMIP Virtual Workshops on May, August, and November 2021, the Virtual "Global" Mizer Course in June 2021, and the Size Spectrum Workshop at the World Fisheries Congress in September 2021.
- **Phillipa Cohen** and **Emily Ogier** will be working on the project "Detecting shifts in discourse shifts around oceans and SSF".
- Public Participatory GIS (PPGIS) platform, developed by PhD students **Dimuthu Jayakody** and **Malcom Johnson**, will commence its initial testing in April through surveys on place attachment, climate risk perceptions and adaptation behaviours of coastal communities along the east coast of Tasmania.
- PhD student **Liam Fullbrook** will be attending and presenting the paper "Persistent Problems in Australian Integrated Ocean Management" at the 2021 Coast to Coast Conference to be held in Cairns in July.
- **Beth Fulton** will be presenting key notes on July 5th at the 2021 symposium of the International Society for Fish Biology, which has a theme of Fish, Fisheries and the Anthropocene (https://www.fsbi.org.uk/symposium-2021-ku-leuven/) and at the World Fisheries Congress (during the program that will run from 20-24 September; https://wfc2020.com.au/).



• Lutruwita Maireener Shells & Climate Change Project, led by Mibu Fischer, guided by Dean Greeno and involving Cayne Layton and Gretta Pecl. Maireener shells are of significant cultural importance to the Lutruwita (Tasmanian) Aboriginal community, this project will utilise Traditional Knowledge to create a baseline of understanding maireener shell species and changes observed over time using Traditional Knowledge. *Funded by the Tasmanian Climate Change Office.*



- Next IPCC working group II report is due early 2022 and includes contributions from Lead Authors **Andrew Constable** and **Gretta Pecl**.
- Future Earth Ocean and Coasts expert working group will release a National Ten Year Strategy for Sustainable Ocean and Coasts, which will outline clear, actionable strategies for achieving healthy and resilient oceans and coasts for all of Australia. The working group is co-chaired by Dr **Beth Fulton**, and also includes **Alistair Hobday** and **Gretta Pecl**. https://www.futureearth.org.au/initiatives/ocean-andcoastal-sustainability/oceans-and-coasts-expert-working-group
- PhD student **Angus Henderson** together with a group of IMAS students will be doing a science immersion event for science week 2021. They won a National Science Week Seed Grant 2021 from the Tasmanian National Science Week Coordinating Committee to organise the event.
- MSEAS 2020 Yokohama is being re-planned for Dec 2021, or May 2022. It has received UN Decade of the Ocean Endorsement. CMS is a sponsor of this Marine Socio-Ecological Systems conference.
- Ocean Visions Summit (May 18th -20th 2020). The summit is a collaborative effort between four campuses around the world: San Diego, USA; Hobart, Australia; Cape Town, South Africa and Kiel, Germany. In Hobart, CMS will run a hybrid event where we will have an opportunity to virtually join some sessions of interest at other campuses and also have some face-to-face events and activities.
- **On The Shoreline** (mid 2021): 'On the Shoreline' is an artist's film developed with the support of Arts Tasmania and Screen Tasmania, to be completed in 2021. Part of a series of work by Australian artists Tess Campbell and Sam Mountford in collaboration with CMS PhD student **Peter Puskic**. On The Shoreline is "an example of open-ended interdisciplinary exchange between visual arts and the environmental sciences. With previous involvement in DarkMOFO and HOBIENNALE'19, this project aims to explore the intersections of speculative fiction and ecological thinking within the framework of this important research'. It uses histopathology images of seabirds exposed to plastic pollution.
- **Gretta Pecl** will be presenting the webinar: "climate-driven species re-distribution in marine coastal systems" at the Funk Lecture Series on Biogeography organised by the International Biogeography society, 1st April 2021.
- **Gretta Pecl** has been awarded the 2020-2021 the University of Victoria Distinguished Women Scholar and will be giving a public lecture on the 19th March 2021.
- **Gretta Pecl** is part of the Review Committee for the formal evaluation of the Integrated Marine Biosphere Research Program (IMBeR), on behalf of the Scientific Committee on Oceanic Research (SCOR), a member of the International Science Council (ISC).
- PhD student **Danielle Smith** will be presenting the paper 'What impact will the BBNJ treaty have on the establishment of MPAs in the Southern Ocean and the North-east Atlantic region?', at the ANZSIL Oceans and International Environmental Law Interest Group (OIELIG) workshop The Future of International Environmental Law and the Law of the Sea on 15 April 2021.
- Joseph Wenta has been invited to deliver a lecture and act as a mentor in the Global Policy, Diplomacy and Sustainability Fellowship program (it is a program delivered by EnviPol, a sustainability focused environmental consultancy) with the support of the Association of NGOs and CSOs for South-South Cooperation (Part of the UN Office for South-South Cooperation) and the International Union for Conservation of Nature (IUCN).
- **Rowan Trebilco** is the lead author of the Marine chapter of the Australia 2021 State of the Environment report, with CMS coauthors **Mibu Fischer** and **Alistair Hobday**. The report will be tabled in Parliament by the end of 2021.





Future Seas performances Jordan Prosser and David Finnigan create interactive performances illustrating future scenarios. Using the toolkit of Futures Studies and scenaric thinking, Jordan and David will create an original interactive performance based on the Future Seas research papers. The show will tell the story of a group of people in two possible versions of 2030: a 'Business-as-Usual' future and a 'More Sustainable' future. In each future we'll see the same characters and the same story, but the world will be different. The audience will be able to make decisions to determine the trajectory of the story. The show will be presented alongside someone from the Future Seas research team, who will host a debrief conversation with the audience to unpack some of the themes and issues raised in the work. There will be three performances during the Science Week in August, one for the public, one for scientists and one for stakeholders.

Future Seas special issue in Reviews in Fish Biology and Fisheries will be published in September 2021. All the challenge papers have been submitted and are in different stages of the reviewing process. Several papers have already been published online.

The Future Seas methods paper: Nash, KL, Alexander, K, Melbourne-Thomas, J, Novaglio, C, Sbrocchi, C, Villanueva, C & Pecl, GT 2021, 'Developing achievable alternate futures for key challenges during the UN Decade of Ocean Science for Sustainable Development', *Reviews in Fish Biology and Fisheries*, accessed from <https://link.springer.com/article/10.1007/s11160-020-09629-5>.







Future Seas Challenge 4: Kelly, R, Evans, K, Alexander, KA, Bettiol, S, Corney, SE, Cullen-Knox, C, Cvitanovic, C, de Salas, K, Emad, GR, Fullbrook, L, Garcia, C, Ison, S, Ling, SD, Macleod, C, Meyer, A, Murray, L, Murunga, M, Nash, K, Norris, K, Oellermann, M, Scott, J, Stark, J, Wood, G & Pecl, G 2021, 'Connecting to the oceans: Supporting ocean literacy and public engagement', *Reviews in Fish Biology and Fisheries*, vol. online, accessed from <https://doi.org/10.1007/s11160-020-09625-9>. Including the Ocean Literacy Toolkit.





Future Seas Challenge 7: Bax, N, Novaglio, C, Maxwell, KH, Meyers, K, Mccann, J, Jennings, S, **Frusher, S, Fulton, EA**, Nursey-Bray, M, **Fischer, M**, Anderson, K, **Layton, C**, Emad, R, **Alexander, KA**, Rousseau, Y, Lunn, Z & Carter, CG 2021, 'Ocean resource use: building the coastal blue economy', *Reviews in Fish Biology and Fisheries*, vol. 0, accessed from <https://link.springer.com/article/10.1007/s11160-021-09636-0>.

CASE STUDY						
		New Zealand	Myanmar Delta Landscape	Key Recommendations		
19080	ACTION 1	A Climate Change Response is at the core of the Blue Economy, leveraging New Zealand's history of recognising rights and resolving conflict.	Myanmar's long isolation has resulted in	Tools and incentives are required to support communities in shifting to more sustainable practices. This may require large investments to diversity economies and provide alternative livelihoods.		
	Change is motivated and facilitated		development, agricultural-driven deforestation and an over-dependence on natural resources.			
(M.	ACTION 2	An integrated ecosystem based marine	Capacity building is in place between	Bottom-up processes, empowerment and		
S.	Coastal ecosystems are co-managed by reliant multiple groups	balances the rights of Macri kaltektanga (stewardship) and formal management structures.	collaborative management structures remains a challenge, as it threatens traditional power structures and economic frameworks.	and truly sustainable livelihoods – balancing conservation with utilisation. Industry and governments can facilitate this transition.		
1833	ACTION 3	Legislation and regulations support Miori participation in management with local community support, and additional compliance, monitoring tools that traditional practices alone may not provide.	Management prioritises protection of	Adaptability to scale, geography, social and		
	Networks that maintain and enhance biodiversity are implemented		collaborative patrolling and small-scale income-generation. Without effective law enforcement, conflict with livelihoods and illegal activities undermines conservation.	environmenta vanisties - compresent de necessary tools and conomic mechanisms facilitates local buy-in to support sustainability.		
	ACTION 4	A pathway for applying indicators of	Tools that lift people out of poverty grant	Reconceptualising livelihoods in fulfiliment of		
¥2	Decision-making is equitable and based on ecosystem services	wei-being alongside economics reflects a broader set of objectives, traditional practices and concepts of fair and equitable resource distribution.	egency to access equitative decision-making - directly impacting their actions, curbing the depletion of resources and environmental degradation.	the SDGs requires wealth distribution mechanisms that support sustainable coastal management; recognising the need for adequate resourcing and poverty alleviation.		
	ACTION 5	Public advice on how to invest for a decade clearly recognised scientific	Budgets and skill-bases are constrained. Global trusts (e.e., UN, World Bank) and	Access to transparent, agreed and shared knowledge de-escalates conflict triggers and		
	Knowledge of the marine realm is strengthened - mapping the ocean of life	excellence, collaboration across organisations, engagement with and benefits to the community.	long-term legacy collaborations can support data accumulation to transform decision-making and inform policy.	collaborative funding must recognise the wealth of existing local and Indigenous knowledge and work with knowledge-based institutions.		
A	ACTION 6	The national adaptation plan considers economic, social, health, environmental.	Without good governance, equitable benefit sharing is nigh impossible.	Actions come with costs (even doing nothing). Re-thinking benefit-sharing requires engaged		
	The interests of diverse user groups are balanced with a fair distribution of benefits	ecological, and cultural effects of climate change. While beneficial, it is not a straightforward process.	Balancing the stakes of diverse users requires adequate resourcing, and an in-depth understanding of cumulative impacts.	knowledge holders, conflict-resolution tools, and schemes to assist during a transition to sustainable livelihoods.		



Future Seas Challenge 8: Novaglio, C, Bax, N, Boschetti, F, Emad, GR, **Frusher, S**, **Fullbrook, L, Hemer, M**, Jennings, S, **van Putten, I**, Robinson, LM, Spain, E, **Vince, J**, Voyer, M, **Wood, G & Fulton, EA** 2021, 'Deep aspirations: towards a sustainable offshore Blue Economy', *Reviews in Fish Biology and Fisheries*, vol. 6, pp. 1–22, accessed from <http:// link.springer.com/10.1007/s11160-020-09628-6>.





Future Seas Challenge 10: Haas, B, Mackay, M, Novaglio, C, Fullbrook, L, Murunga, M, Sbrocchi, C, McDonald, J, McCormack, PC, Alexander, K, Fudge, M, Goldsworthy, L, Boschetti, F, Dutton, I, Dutra, LXC, McGee, J, Rousseau, Y, Spain, E, Stephenson, RL, Vince, J, Wilcox, C & Haward, M 2021, 'The future of ocean governance', *Reviews in Fish Biology and Fisheries*, vol. 0123456789, pp. 1–18, accessed from https://doi.org/10.1007/s11160-020-09631-x.

The future of ocean governance

Ocean governance is complex and influenced by multiple drivers and actors with different worldviews and goals. We identified goals and associated actions that can address major risks arising from governance-related issues.



 Hoos et al. 2021, Reviews in Fish Biology and Fisher DOI: https://doi.org/10.1007/s11160-020-09631-x

Sustainable use of resources

• Place-based management planning

- · Innovative business models for marine industries
- * Ensuring a strong legal basis for protecting marine resources

Equitable distribution of access and benefits

- · Fair decision-making processes
- Explicit benefit-sharing arrangements • Building capacity for those unheard

Responding to changing oceans

- Plan, understand and share different approaches
- Cooperation on long timescales
 Be ready to respond



ANNEX

EXECUTIVE TEAM

Gretta Pecl, CMS Director Beth Fulton, Deputy Director Cecilia Villanueva, Executive Support Officer

THEME LEADERS

Coastal & Marine Governance: Karen Alexander & Pedro Fidelman Environmental Change & Adaptation: Ingrid van Putten & Rowan Trebilco Knowledge Production: Jess Melbourne-Thomas & Maree Fudge Science Engagement & Impact: Rachel Kelly & Geoff Syme Sustainable Futures & Planetary Health: Kirsty Nash & Anna Farmery

CMS MEMBERS

Alistair Hobday, CSIRO Andrew Constable, AAD Anna Farmery, University of Wollongong Asta Audzijonyte, IMAS Aysha Fleming, CSIRO Barbara Nowak, IMAS Benjamin Richardson, School of Law Beth Fulton, CSIRO Camilla Novaglio, IMAS Cara Stitzlein, CSIRO Catriona MacLeod, IMAS Cayne Layton, IMAS Cecilia Villanueva, IMAS Chloe Lucas, Geography, Planning & Spatial Sciences Chris Cvitanovic, ANU Chris Wilcox, CSIRO Darla Hatton MacDonald, TSBE David Mossop, IMAS David Smith, CSIRO Delphi Ward, IMAS Denise Hardesty, CSIRO Dirk Welsford, AAD Dugald Tinch, TSBE

CMS STUDENTS

PhD

Angela Abolhassani, School of Law Angus Henderson, IMAS Anne Boothroyd, IMAS Bianca Haas, IMAS Carla Sbrocchi, UTS Catarina serra Goncalves, IMAS Clare Pitt, School of Psychological Sciences Cloe Cummings, IMAS (suspended) Coco Cullen-Knox, School of Social Sciences Corrine Condie, IMAS

STEERING COMMITTEE

Alistair Hobday, CSIRO Beth Fulton, CSIRO Chris Carter, IMAS Dugald Tinch, TSBE Gillian Slocum, AAD Gretta Pecl, IMAS Ian Dutton, DPIPWE

SOCIAL MEDIA TEAM

Catarina Serra Goncalves Liam Fullbrook Mary Mackay Rachel Kelly Tormey Reimer Ingrid van Putten, CSIRO Jan McDonald, School of Law Jenn Scott, School of Psychological Sciences Joanna Vince, School of Social Sciences

STUDENT REPRESENTATIVES

Bianca Haas Sierra Ison

Jonny Stark, AAD Martin Exel, Austral Fisheries Rich Little, CSIRO Satoshi Yamazaki, TSBE Terry Bailey,

CMS ALUMNI

Angela Abolhassani Dean Greeno Florence Briton Joseph Wenta Larelle Bossi Mary Mackay Rachel Kelly Richard Cottrell Yannick Rousseau

Elizabeth Lester, School of Creative Arts and Media Emily Ogier, IMAS Eva Plaganyi-Lloyd, CSIRO Fabio Boschetti, CSIRO Genevieve Phillips, IMAS & AAD Geoff Syme, CSIRO Graham Wood, School of Humanities Gretta Pecl, IMAS Ian Butler, ABARES Ingrid van Putten, CSIRO Jan McDonald, School of Law Jan Shaw, IMAS Javier Porobic, CSIRO Jeffrey McGee, School of Law & IMAS Jenn Scott, School of Psychological Sciences Jennifer Lavers, IMAS Jess Melbourne-Thomas, CSIRO Joanna Vince, School of Social Sciences Jonathan Reum, University of Washington

Jonny Stark, AAD Joseph Wenta, University of Newcastle Julia Blanchard, IMAS Julia Santana Garcon, IMAS Karen Alexander, IMAS Keith Sainsbury, IMAS Kirsty Nash, IMAS Larelle Bossi, IMAS Leo Dutra, CSIRO Linda Murray, Massey University Madeline Green, CSIRO Marcus Haward, IMAS Maree Fudge, IMAS Mark Hemer, CSIRO Martin Exel, Austral Fisheries Mary Mackay, CSIRO Mary-Anne Lea, IMAS Mibu Fischer, CSIRO Narissa Bax, IMAS Natalie Stoeckl, TSBE Peat Leith, TIA Pedro Fidelman, University of Queensland

Phillipa Cohen, James Cook University Phillipa McCormack, School of Law Rachel Kelly, IMAS Rachel Nichols, TSBE Rich Little, CSIRO Richard Cottrell, NCES Robert Stephenson, St. Andrews Biological Station Rowan Trebilco, CSIRO Satoshi Yamazaki, TSBE Scott Bennett, IMAS Scott Condie, CSIRO Sean Tracey, IMAS Stewart Frusher, IMAS Stuart Corney, IMAS Swee-Hoon Chuah, TSBE Tony Smith, IMAS & CSIRO Valeriya Komyakova, IMAS Vanessa Adams, Geography, Planning & Spatial Sciences

Danielle Smith, School of Law Denis Karcher, ANU Dimuthu Jayakody, Geography, Planning & Spatial Sciences Elisavet Spanou, TSBE Florence Briton, IMAS Hannah Fogarty, IMAS Julian Manning, IMAS Kathy Willis, School of Social Sciences Katie Marx, School of Humanities Kelsey Richardson, School of Social Sciences Liam Fullbrook, School of Social Sciences Linda Hunt, School of Creative Arts and Media Lisa Uffman-Kirsch, School of Law Lynda Goldsworthy, IMAS Lynna Cortes Rueda, TSBE Lynnlee Chikudza, IMAS Malcolm Johnson, Geography, Planning & Spatial Sciences Manon Simon, School of Law Mengzhu Zhang, IMAS Michael Murunga, IMAS Niyomi Pethiyagoda, IMAS Peter Puskic, IMAS

Pricilla Rakotoarisoa, IMAS Sheku Sei, IMAS Sheryl Hamilton, IMAS Sierra Ison, IMAS Theresa Stoll, IMAS (suspended) Tormey Reimer, IMAS

Masters Fiona Hamilton, IMAS

Undergrad

Dean Greeno, School of Creative Arts and Media Giarn Carroll, IMAS



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