

A man with a beard and sunglasses is smiling while holding a large, silvery fish with a greenish tint. He is on a boat, and the background shows a body of water and a cloudy sky. The text 'ANNUAL REPORT 2019' is overlaid on the image.

ANNUAL REPORT 2019



CENTRE FOR MARINE SOCIOECOLOGY

INTRODUCTION

Australia is a marine nation with over 80% of the population living within 50 kilometres 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 5 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 often conflicting objectives, to ensure sustainable ecosystems, industries and social and economic benefits for communities is a major challenge globally.

The Centre for Marine Socioecology (CMS), is a 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 the Centre has gained well-deserved international recognition for the challenging research being conducted and communicated in innovative ways, and look forward to its continued success into the future.

Professor Anthony Koutoulis

Deputy Vice-Chancellor (Research)
University of Tasmania

Dr Tony Worby

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



L-R: Beth Fulton and Gretta Pecl

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, philosophy and governance from the Institute for Marine and Antarctic Studies, College of Arts, Law and Education, the Discipline of Geography and Spatial Sciences, 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). 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 activity from 2019. Wholehearted thanks to all our students, researchers, collaborators and stakeholders, for their ongoing efforts in the Centre of Marine

Socioecology. Not only has your generosity and enthusiasm enriched our collective efforts, but the contributions and outcomes are being realised 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 2020.

Professor Gretta Pecl (IMAS UTAS)

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

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

CENTRE FOR MARINE SOCIOECOLOGY RESEARCH THEMES

Socioecology is a challenging new area of research that combines multidisciplinary, interdisciplinary and trans-disciplinary components.

The demands of a growing human population have necessarily triggered rapid and ongoing 'blue' growth. However, marine ecosystems cannot support ongoing growth without transformational change in their use and governance as well as innovative solutions towards improved understanding, monitoring and protection. To meet the challenge of sustainable

oceans, a coordinated, interdisciplinary and transdisciplinary approach is needed. The Centre for Marine Socioecology was created out of a common desire to provide the knowledge needed to support the current and future use of our marine coasts and oceans. We bridge research excellence in physical, natural, social sciences and humanities to inform future development of individual sectors such as food production, energy generation, transport, recreational and cultural value. Our work is actively working towards solutions in the following areas:



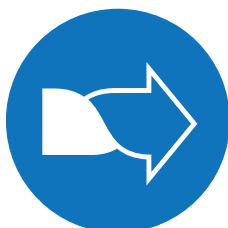
Coastal & Marine Governance

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



Sustainable Futures & Planetary Health

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



Environmental Change & Adaptation

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



Knowledge Production

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



Science Engagement & Impact

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

CHALLENGES

RESEARCH APPROACH



Image credit: Rita Lukkarinen

Our Theme Co-Leads:



Coastal & Marine Governance:

Karen Alexander and Pedro Fidelman



Sustainable Futures & Planetary

Health: Kirsty Nash and Anna Farmery



Environmental Change &

Adaptation: Ingrid van Putten and Rowan Trebilco



Knowledge Production:

Jess Melbourne-Thomas and Maree Fudge



Science Engagement & Impact:

Rachel Kelly and Geoff Syme

Across these connected themes our research delivers:

- Understanding of socioecological systems and the interactions that characterise them
- Research integration, synthesising understanding of socioecological challenges and how to effectively meld perspectives from multiple disciplines, working with a range of stakeholders to co-produce knowledge
- Technical expertise and tools around qualitative and quantitative approaches to inform management of multiple uses in our coastal and marine domains.

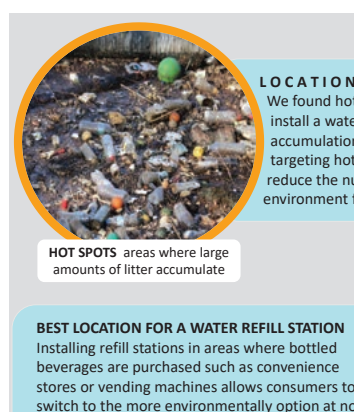
INDEX

2019 Highlights	7
2019 Snapshot	12
Summary of scientific outputs	13
Papers	15
Conferences and public presentations	25
Committees, working groups, panels & networks	31
Grants and scholarships	32
Awards and prizes	33
Other outputs	35
Public outreach	37
CMS events	42
Graduated PhD students	44
Future Events for 2020	45
Visitors	46
Annex	47

2019 HIGHLIGHTS



ABOVE Part of Kathy Willis's winning poster at the CMS Showcase



ABOVE Kathy Willis



One of the Q & A panels at the CMS Showcase

CMS Annual Showcase

The second annual CMS Showcase Event, held on Wednesday 29th of May at the Hobart Function and Conference Centre, brought together over 110 representatives from across our marine industry sectors, State Government, non-governmental organisations, UTAS, CSIRO, AAD and the public. Presentations focussed on 'Interdisciplinary research to support the UN Decade of Ocean Science for Sustainable Development', and stakeholders participated in panel discussions followed by Q & A sessions exploring sustainable behaviours, and potential opportunities for marine Australia under a changing environment.

Congratulations to CMS student Kathy Willis, working with Denise Hardesty, Joanna Vince and Chris Wilcox, for winning the best Poster Award and Maree Fudge, working with Marcus Haward, Karen Alexander, Emily Ogier, Peat Leith and Catriona Macleod, for the best talk for her presentation "Revisiting legitimacy of participation in marine governance and decision-making".



CMS IN THE SPOTLIGHT



Tatiana van Steveninck

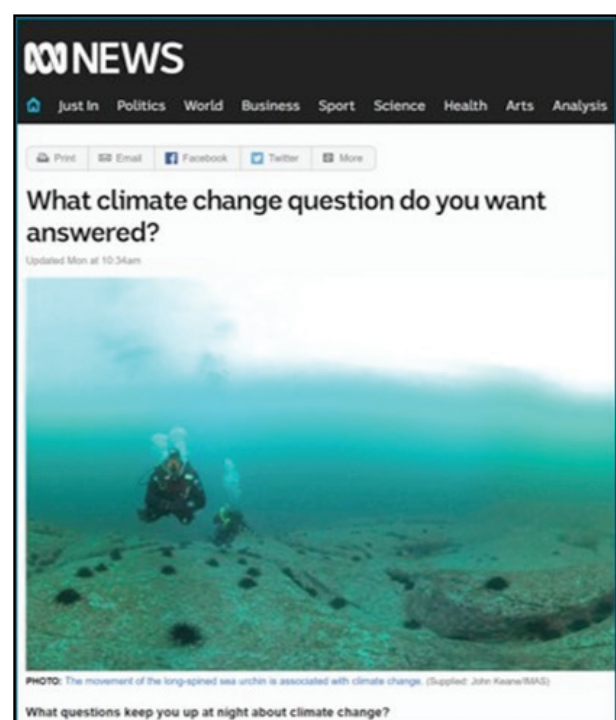
Masters student Tatiana van Steveninck visited CMS early 2019 from Leiden University (Science Based Business) and undertook interviews with CMS members to capture how the Centre plans and executes successful interdisciplinary research. Tatiana's surveys revealed part of CMS success can be attributed to the culture, leadership and networking opportunities available to members.

Curious Climate

In August for National Science Week, CMS led a large, collaborative public engagement project called *Curious Climate Tasmania* (www.curiousclimate.org.au). In collaboration with ABC Radio, IMAS, UTAS, CSIRO and other sections of UTAS, the project aimed to find out what climate change questions the public were curious about, *before* we put teams of scientists together to road-trip around Tasmania and answer those very questions. A two-week radio call out from ABC resulted in over 300 questions from the public being lodged online, and extensive locally-relevant media content being developed in response by ABC, with support of many local scientists.

The project culminated in four public forums across Tasmania (Queenstown, Launceston, St Helens, Hobart) where a panel of engaging scientists answered the top 8 questions received from each region, followed by Q&A with the scientist panel. Over 550 people, aged from 10 to 89, attended these events, and at each location, questions from the audience continued for at least 45 minutes longer than the 30 minutes of question time originally scheduled! In addition to the live events, the project generated 28 interviews with scientists and many online news features, with some recording over 90,000 audience views.

Survey data from both audiences and journalists demonstrated how such new approaches to audience-led local journalism and science

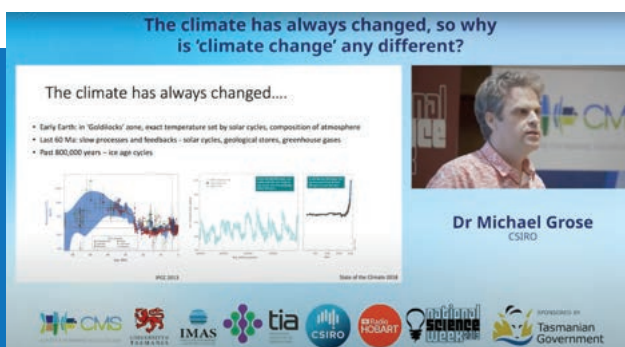


ABOVE The call out across Tasmania, via ABC Radio, yielded over 300 questions about climate change from the curious public.



ABOVE Leon Compton from ABC Radio hosted the Hobart public forum at the Stanley Burbury Theatre.

communication can deliver relevant local news and provide trusted, relevant sources of information on complex issues. The team will be publishing results from surveys completed by attendees in a number of scientific publications, and the presentations made at the public events are available online via the website www.curiousclimate.org.au. The project was generously sponsored by National Science Week and the Tasmanian Government, through the Tasmanian Climate Change Office.



Video footage of the presentations and special interviews can be found on the Curious Climate YouTube Channel <https://www.youtube.com/playlist?list=PLdQWgl2EmCJJYwd7MP11RYK3ZViHjN8Pk>



Future Seas

<https://futureseas2030.org/>

The Centre for Marine Socioecology is a registered partner for UN Decade and we are pleased to say that Future Seas is listed as a voluntary commitment for the UN Oceans Conference that was to be held in June (prior to COVID-19 outbreak) (<https://oceanconference.un.org/commitments/?id=35402>) - one of only 56 voluntary commitments from academic organizations.

Future Seas develops evidence-informed scenarios of the future by 2030, for each of 12 key challenges (including graphical depictions of each challenge), and then generates a tangible plan for possible actions at local, regional and global scales. These actions are designed to realise a vision for 2030 which is in line with achieving an equitable and sustainable future (as outlined by the United Nations Sustainable Development Goals).

Approximately 40% of the Future Seas group are PhD students and Early Career Researchers, providing an excellent opportunity to train and mentor the next generation of interdisciplinary researchers with the skills, experience and expertise necessary to help address some of the complex interdisciplinary challenges faced by society today.

Several workshops were held throughout 2019, culminating in a major five-day workshop in November 2019. The key motivation of the week-long workshop was to invite experts from around



ABOVE Dr Tero Mustonen of the Snowchange Initiative, chairing a workshop session on 'Perspectives from Traditional and Indigenous Knowledge holders' at the start of the workshop.



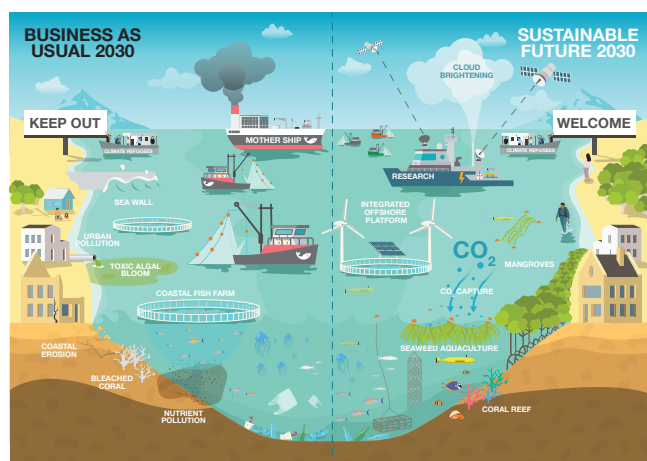
RIGHT Sutej Hugu performing a praise song in the traditional Tao tune of 'anood' at the start of the November workshop, recognising the "pioneering dialogues between scientists and Indigenous heritage keepers seeking a brave new planet governance starting from the oceans".



the world to Tasmania, to be part of a Future Seas Traditional and Indigenous Working Group, to define and lead their own 'key challenge' for the ocean. We are grateful to have the leadership and ongoing involvement of the Snowchange Cooperative, an innovative network and scientific organization working with and representing local and Indigenous cultures around the world, and participation of Indigenous knowledge holders, scholars and Elders from Finland, Taiwan, Canada, Greenland, New Zealand, Papua New Guinea and of course Australia.



ABOVE Participants in the Future Seas workshop.



ABOVE An example of one of the draft graphical depictions of the business-as-usual vs. optimistic-but-technically-achievable futures for ocean social-ecological systems, being developed for the key Future Seas challenge "Warming world, changing ocean: mitigation and adaptation to support resilient marine systems" led by Rowan Trebilco.

Future Seas Key Challenges



1. WARMING WORLD, CHANGING OCEAN: ADAPTATION AND MITIGATION FOR RESILIENT MARINE SYSTEMS.



2. SAFEGUARDING MARINE LIFE: CONSERVATION OF BIODIVERSITY AND ECOSYSTEMS.



3. FOOD FOR ALL: DESIGNING SUSTAINABLE AND SECURE FUTURE SEAFOOD SYSTEMS.



4. CONNECTING TO THE OCEANS: SUPPORTING OCEAN LITERACY AND PUBLIC ENGAGEMENT.



5. CLEANER SEAS: REDUCING MARINE POLLUTION.



6. OCEANS AND SOCIETY: FEEDBACKS BETWEEN OCEAN AND HUMAN HEALTH.



7. OCEAN RESOURCE USE: BUILDING THE COASTAL BLUE ECONOMY.



8. DEEP ASPIRATIONS: TOWARDS A SUSTAINABLE OFFSHORE BLUE ECONOMY.



9. POLEWARD BOUND: ADAPTING TO CLIMATE DRIVEN SPECIES REDISTRIBUTION.



10. THE FUTURE OF OCEAN GOVERNANCE.



11. SHARING OUR OCEANS FAIRLY: IMPROVING INTERNATIONAL RELATIONS AROUND OCEAN ISSUES



12. A FAIR OCEAN FUTURE FOR EARTH'S FIRST PEOPLES.

Summary Papers



S1. IMPACT: Impact for the oceans: making science more meaningful for industry, society and government.



S2. EQUITY: Equity of our future oceans: reflections on outcomes and practice.



S3. BEHAVIOUR CHANGE: Driving desirable change: how do we achieve 'the ocean we need for the future we want'?

2019 SNAPSHOT



24

VISITING
SCIENTISTS



78

SCIENTIFIC
PUBLICATIONS



5

BOOK CHAPTERS



39

STUDENTS



72

CONFERENCES

Plenary and keynote speakers,
general presentations



32

FUNDING, AWARDS
AND PRIZES



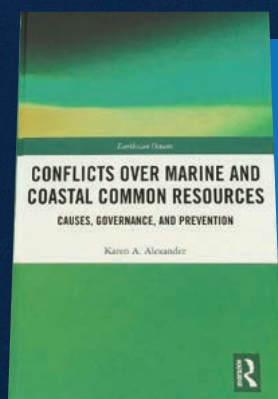
81

RESEARCHERS



18

CMS
SPONSORED
EVENTS



Dr Karen Alexander published her first book in September, titled "Conflicts Over Marine and Coastal Common Resources: Causes, Governance and Prevention". Available from: <https://www.goodreads.com/book/show/44900479-conflicts-over-marine-and-coastal-common-resources>



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).

Overall research performance for 2019

Scholarly Output

81

Citation Count

225

Authors

453

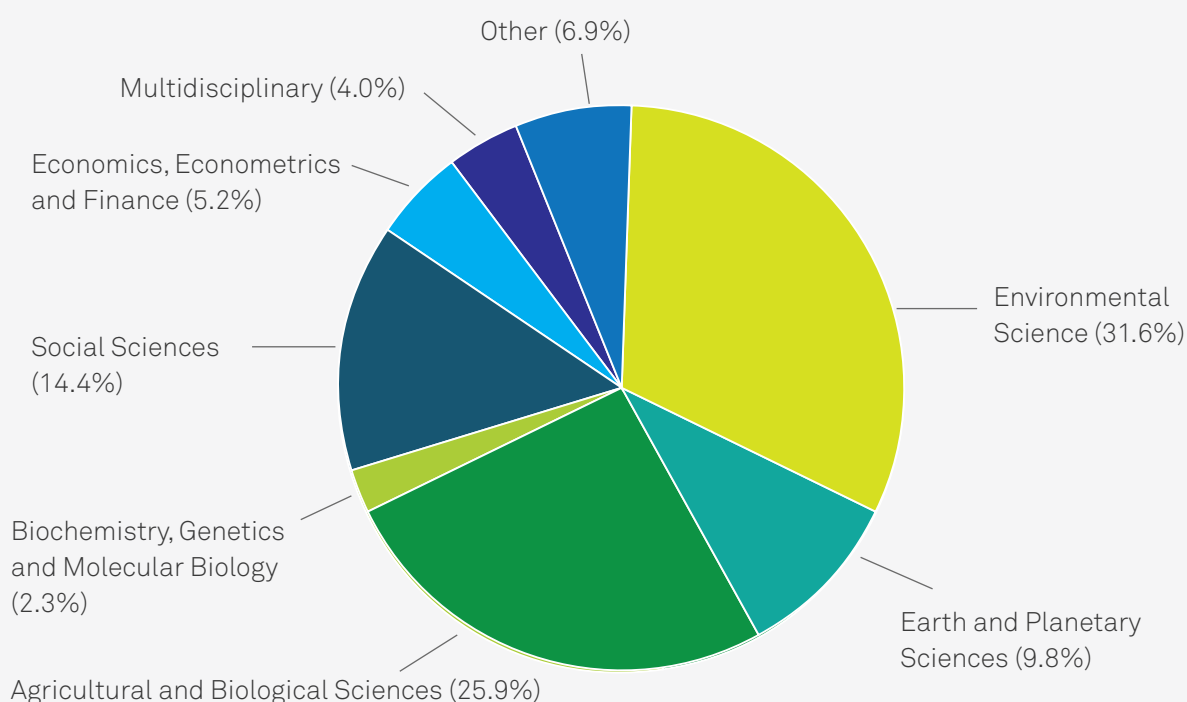
Ave. Citations per Publication

3

Field-Weighted Citation Impact

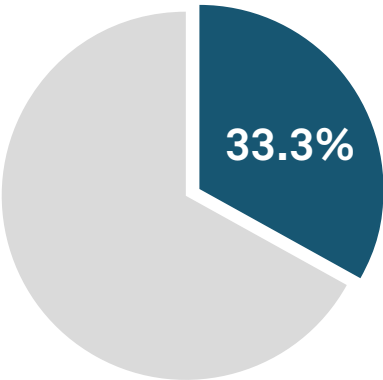
2.44

2019 publications across disciplines



Outputs in Top Citation Percentiles

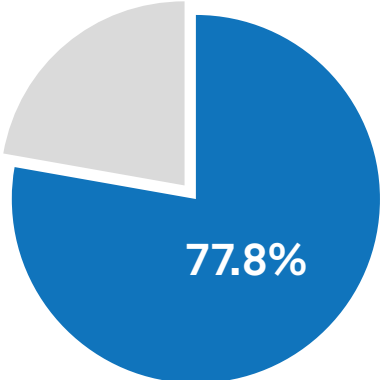
CMS Publications in top 10% most cited world wide



Values for University of Tasmania and Australia are 19.3% and 18.7%, respectively for 2015-2019

Publications in Top Journal Percentiles

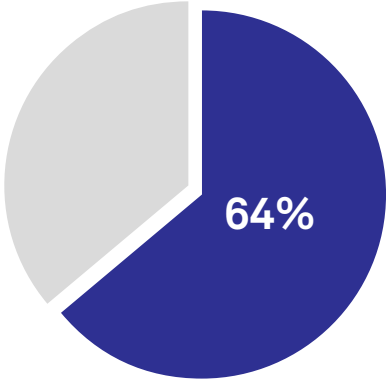
CMS Publications in top 10% journals by CiteScore Percentile



Values for University of Tasmania and Australia are 39.6% and 37.2%, respectively for 2015-2019

International Collaboration

CMS publications co-authored with institutions in other countries



Values for University of Tasmania and Australia are 50.1% and 52%, respectively for 2015-2019





PAPERS

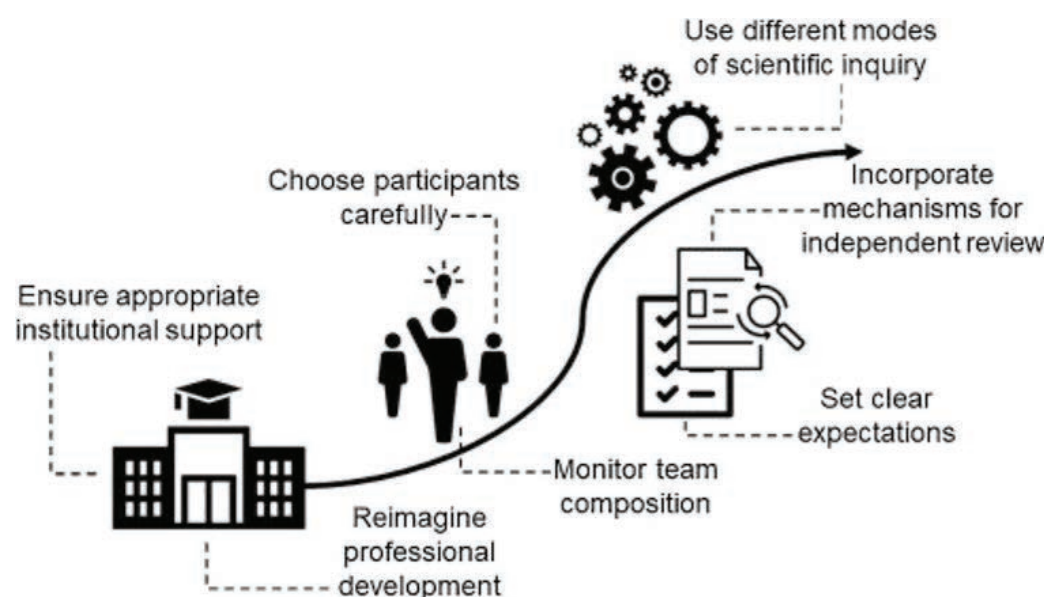
Image credit: Rowan Trebilco

At CMS, we try to ensure active dissemination of our publications within academic, public, industry and policy spheres. Part of that involves an active social media team (thank you Rachel Kelly, Mary Mackay and Liam Fullbrook!), and production of a wide-range of graphics and infographics.

1. **Alexander KA, Haward M** (2019) The human side of marine ecosystem-based management (EBM): 'Sectoral interplay' as a challenge to implementing EBM. *Mar Policy* 101:33–38. <https://doi.org/10.1016/j.marpol.2018.12.019>
2. **Alexander KA, Hobday AJ, Cvitanovic C, Ogier E, Nash KL, Cottrell RS, Fleming A, Fudge M, Fulton EA, Frusher S, Vince J, Watson RA** (2019) Progress in integrating natural and social science in marine ecosystem-based management research. *Mar Freshw Res* 70:71–83. <https://doi.org/10.1071/MF17248>
3. **Audzijonyte A**, Pethybridge H, Porobic J, Gorton R, Kaplan I, **Fulton EA** (2019) Atlantis: A spatially explicit end-to-end marine ecosystem model with dynamically integrated physics, ecology and socio-economic modules. *Methods Ecol Evol* 10:1814–1819. <https://doi.org/10.1111/2041-210X.13272>
4. Bogard JR, **Farmery AK**, Little DC, **Fulton EA**, Cook M (2019) Will fish be part of future healthy and sustainable diets? *Lancet Planet Heal* 3:e159–e160. [https://doi.org/10.1016/S2542-5196\(19\)30018-X](https://doi.org/10.1016/S2542-5196(19)30018-X)
5. Bryndum-Buchholz A, Tittensor DP, **Blanchard JL**, Cheung WWL, Coll M, Galbraith ED, Jennings S, Maury O, Lotze HK (2019) Twenty-first-century climate change impacts on marine animal biomass and ecosystem structure across ocean basins. *Glob Chang Biol* 25:459–472. <https://doi.org/10.1111/gcb.14512>
6. Champion C, **Hobday AJ**, Zhang X, **Pecl GT, Tracey SR** (2019) Changing windows of opportunity: Past and future climate-driven shifts in temporal persistence of kingfish (*Seriola lalandi*) oceanographic habitat within south-eastern Australian bioregions. *Mar Freshw Res* 70:33–42. <https://doi.org/10.1071/MF17387>
7. Champion C, **Hobday AJ, Pecl GT** and **Tracey SR** (2019) Body condition is positively correlated with oceanographic habitat suitability for a coastal-pelagic fish. *Fisheries Oceanography*. DOI: 10.1111/fog.12457.
8. Clements CF, McCarthy MA, **Blanchard JL** (2019) Early warning signals of recovery in complex systems. *Nat Commun* 10:. <https://doi.org/10.1038/s41467-019-09684-y>

9. Cochrane KL, Rakotondrazafy H, Aswani S, Chaigneau T, Downey-Breedt N, Lemahieu A, Paytan A, **Pech GT, Plagányi E**, Popova E, **van Putten IE**, Sauer WHH, Byfield V, Gasalla MA, van Gennip SJ, Malherbe W, Rabary A, Rabearisoa A, Ramaronson N, Randrianarimanana V, Scott L, Tsimanaoraty PM (2019) Tools to enrich vulnerability assessment and adaptation planning for coastal communities in data-poor regions: Application to a case study in madagascar. *Front Mar Sci* 5. <https://doi.org/10.3389/fmars.2018.00505>
10. **Cottrell RS, Nash KL**, Halpern BS, Remenyi TA, **Corney SP, Fleming A, Fulton EA, Hornborg S**, John A, **Watson RA, Blanchard JL** (2019) Food production shocks across land and sea. *Nat Sustain* 2:130–137 . <https://doi.org/10.1038/s41893-018-0210-1>
11. **Cullen-Knox C, Fleming A, Lester L, Ogier E** (2019) Publicised scrutiny and mediatised environmental conflict: The case of Tasmanian salmon aquaculture. *Mar Policy* 100:307–315. <https://doi.org/10.1016/j.marpol.2018.11.040>
12. **Cvitanovic C**, Howden M, Colvin RM, Norström A, Meadow AM, Addison PFE (2019) Maximising the benefits of participatory climate adaptation research by understanding and managing the associated challenges and risks. *Environ Sci Policy* 94:20–31 . <https://doi.org/10.1016/j.envsci.2018.12.028>

Cvitanovic et al 2019

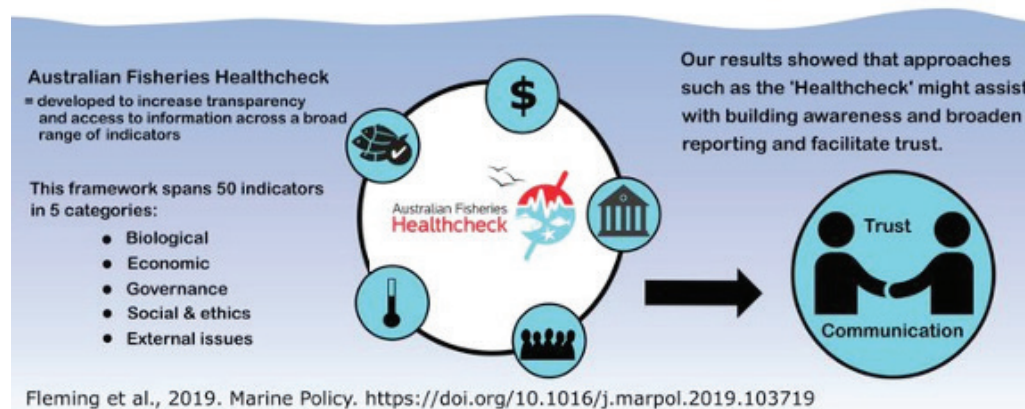


13. Darling ES, McClanahan TR, Maina J, Gurney GG, Graham NAJ, Januchowski-Hartley F, Cinner JE, Mora C, Hicks CC, Maire E, Putinen M, Skirving WJ, Adjeroud M, Bigot L, Bouwmeester J, Brenier A, Bridge TCL, Brown E, Campbell SJ, Cannon S, Cauvin B, Chen CA, Claudet J, Denis V, Donner S, Friedlander A, Gilmour J, Goiran C, Guest J, Hobbs JPA, Hoey AS, Houk P, Johnson S, Jupiter SD, Kayal M, Kuo C, Lamb J, Lee MAC, Low J, Muthiga N, Muttaqin E, Nand Y, **Nash KL**, Nedlic O, Pandolfi JM, Pardes S, Patankar V, Penin L, Ribas-Deulofeu L, Richards Z, Roberts TE, Rodgers KS, Safuan CDM, Sala E, Shedrawi, Sin TM, Smallhorn-West P, Smith JE, Sommer B, Steinberg PD, Sutthacheep M, James CH, Williams GJ, Wilson S, Yeemin T, Bruno JF, Fortin MJ, Krkosek M, Mouillot D (2019) Social–environmental drivers inform strategic management of coral reefs in the Anthropocene. *Nat Ecol Evol* 3:1341–1350. <https://doi.org/10.1038/s41559-019-0953-8>
14. Doyen L, Armstrong C, Baumgrtner S, B.n. C, Blanchard F, Ciss. AA, Cooper R, **Dutra LXC**, Eide A, Freitas D, Gourguet S, Gusmao F, Hardy PY, Jarre A, Little LR, Macher C, Quaas M, Regnier E, Sanz N, Thébaud O (2019) From no whinge scenarios to viability tree. *Ecol Econ* 163:183–188 . <https://doi.org/10.1016/j.ecolecon.2019.04.011>

15. **Dutra LXC**, Sporne I, **Haward M**, Aswani S, Cochrane KL, **Frusher S**, Gasalla MA, Giancesella SMF, Grant T, **Hobday AJ**, **Jennings S**, **Plagányi É**, **Pecl GT**, Salim SS, Sauer W, Taboada MB, **van Putten IE** (2019) Governance mapping: A framework for assessing the adaptive capacity of marine resource governance to environmental change. *Mar Policy* 106:. <https://doi.org/10.1016/j.marpol.2018.12.011>
16. Edwards P, **Fleming A**, Lacey J, **Lester L**, Pinkard E, Ruckstuhl K, Bezuidenhout C, Payn T, Bayne K, Williams T (2019) Trust, engagement, information and social licence - Insights from New Zealand. *Environ Res Lett* 14:. <https://doi.org/10.1088/1748-9326/aaf33c>
17. **Fidelman P**, McGrath C, Newlands M, Dobbs K, Jago B, Hussey K (2019) Regulatory implications of coral reef restoration and adaptation under a changing climate. *Environ Sci Policy* 100:221–229. <https://doi.org/10.1016/j.envsci.2019.04.016>
18. **Fleming A**, **Ogier E**, **Hobday AJ**, Thomas L, Hartog JR, **Haas, B.** (2020) Stakeholder trust and holistic fishery sustainability assessments. *Marine Policy*, 111, 103719. <https://doi.org/10.1016/j.marpol.2019.103719>

Stakeholder trust and holistic fishery sustainability assessment

Sustainability now means considering more than just the target species, and additional information is needed. The aim of the paper is to investigate whether approaches such as Australia's conceptual 'Healthcheck' framework for fisheries sustainability, could contribute to increasing public trust in fisheries management.



Fleming et al 2019

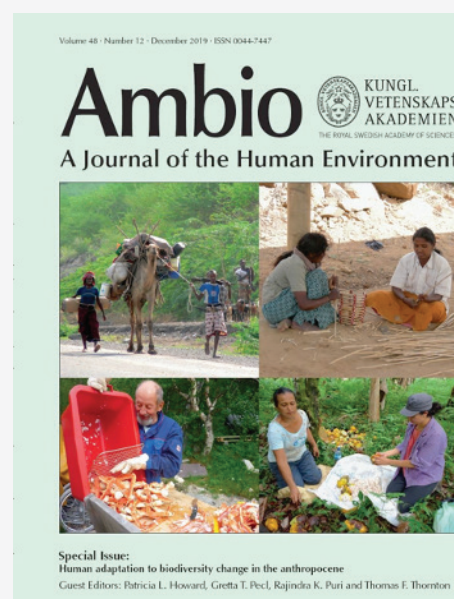
19. **Fogarty HE**, **Cvitanovic C**, **Hobday AJ**, **Pecl GT** (2019) Prepared for change? An assessment of the current state of knowledge to support climate adaptation for Australian fisheries. *Rev Fish Biol Fish* 29:877–894. <https://doi.org/10.1007/s11160-019-09579-7>
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22. Fu C, Xu Y, Bundy A, Grüss A, Coll M, Heymans JJ, **Fulton EA**, Shannon L, Halouani G, Velez L, Akoglu E, Lynam CP, Shin Y-J (2019) Making ecological indicators management ready: Assessing the specificity, sensitivity, and threshold response of ecological indicators. *Ecol Indic* 105:16–28. <https://doi.org/10.1016/j.ecolind.2019.05.055>



Image credit: Rowan Trebilco

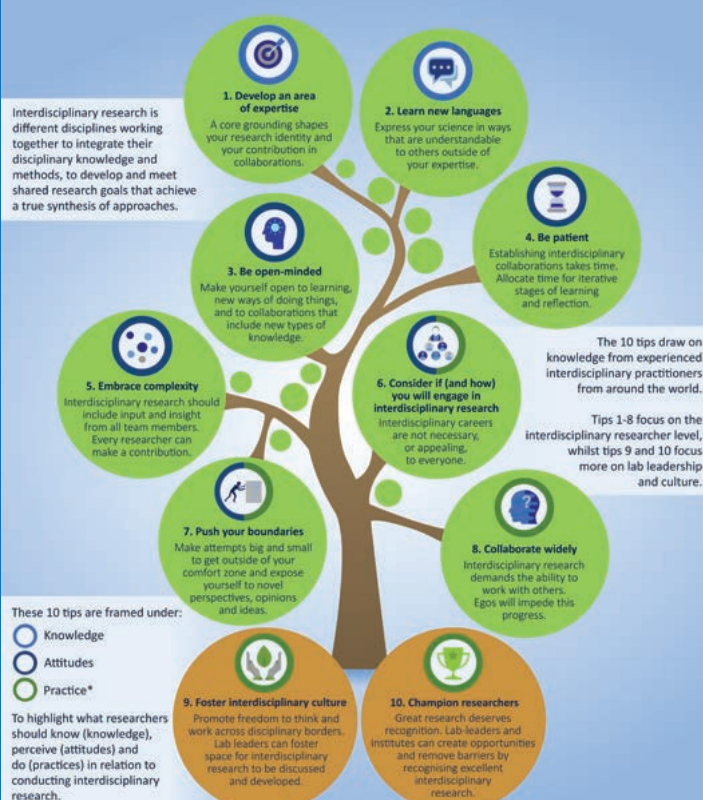
23. **Fudge M**, Hiruy K (2019) Linked Boundary Functions: Examining the Role of 'Research for Development' Organizations in Integrating Levels of Resource Governance. *Soc Nat Resour* 32:255–274 . <https://doi.org/10.1080/08941920.2018.1517914>
24. **Fulton EA, Blanchard JL, Melbourne-Thomas J, Plagányi E**, Tulloch VJD (2019) Where the Ecological Gaps Remain, a Modelers' Perspective. *Front Ecol Evol* 7: . <https://doi.org/10.3389/fevo.2019.00424>
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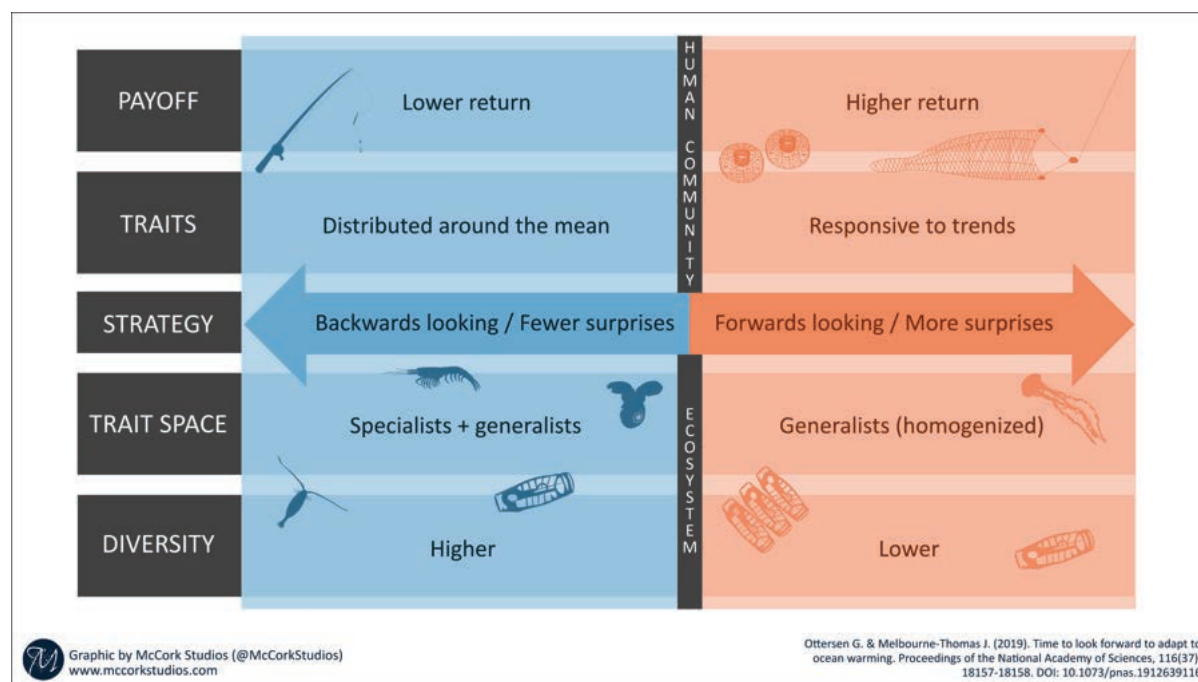
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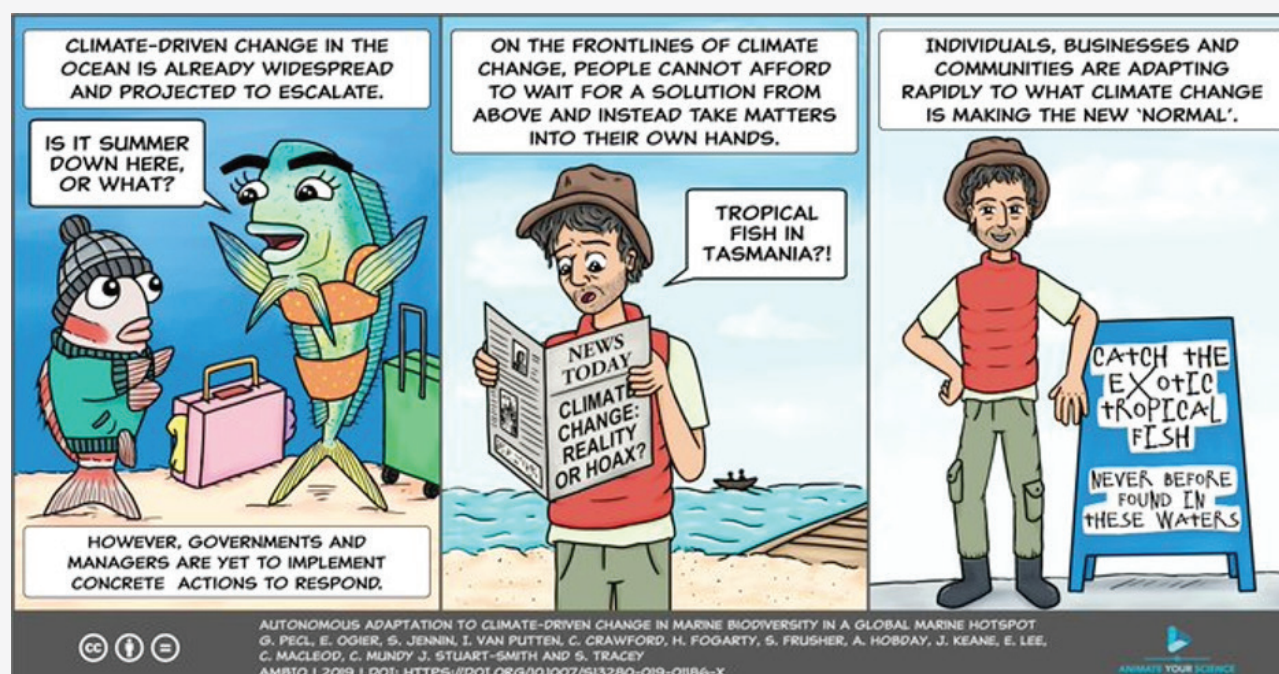
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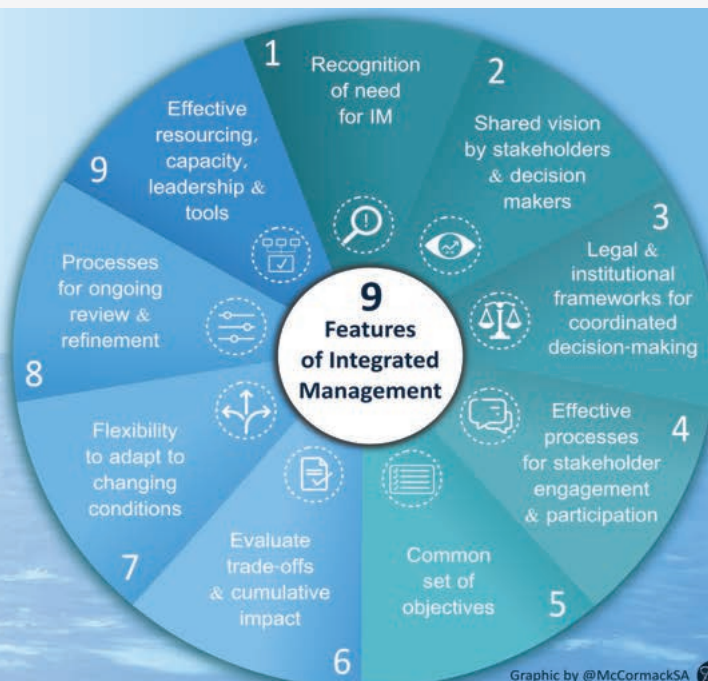
A Practical Framework for Integrated Management of Marine Activities



Integrated Management (IM) provides solutions for the major deficiencies of sector-based management:

- Management of diverse activities by different agencies using different approaches.
- Management primarily focused on ecological objectives that do not properly evaluate social, cultural, economic or institutional objectives.
- No mechanisms to evaluate or advise on trade offs among activities in relation to objectives.
- No mechanisms to evaluate the cumulative effects of all managed activities.
- Insufficient management to deal with changing climate.

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Stephenson et al 2019

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CONFERENCES & PUBLIC PRESENTATIONS

CONFERENCE CONVENING & SYMPOSIA

Professor Gretta Pecl co-convoked the Species on the Move conference held on July 22-26, in Kruger National Park, South Africa. CMS was a major sponsor and CMS members from across many disciplines attended, presented and co-chaired sessions. The conference was carbon offset by supporting the Ekuri community forest in the Cross River State of Nigeria, recognized as the largest and best communally managed forest in West Africa totalling 33,600ha, and a recipient of the prestigious UNDP Equator Award in 2004. We are pleased to say the conference was family-friendly, providing free onsite child-care for participants children – this included visits to see rescued baby rhino's being rehabilitated, opportunities to climb on ranger helicopters and excursions to plant trees in Kruger National Park!

As part of the conference, Gretta ran a communicating science workshop together with Adriana Verges, and participated in an 'Engaging the public in science' panel as well as an Early Career Researcher career pathway Q & A session.



ABOVE HSH Prince Albert II of Monaco officially opened the Species on the Move conference at Kruger National Park. HSH the Prince is dedicated to the protection of the environment and understands how important it is to fully explore the effects of climate change on biodiversity, and the implications of climate-driven changes in species distributions on human health and well-being and was pleased to support the conference.



LEFT Participants from one of the workshops, co-convoked by Mary-Anne Lea, held during the Species on the Move Conference.

Mary-Anne Lea led a pre-conference workshop 'On transboundary conservation options for migratory marine predators in the high seas'. Speakers addressed conservation challenges for sharks in the Galapagos, marine vertebrates in the Southern Ocean, through to bycatch of migratory turtles, High Seas governance and IUCN Key Biodiversity Areas, Important Birds Areas and Important Marine Mammal Areas.

- › **Mackay, M & Kelly, R** Understanding perceptions, participatory processes, and potential for effective marine management. MARE Conference, 24-28th July, Amsterdam, Netherlands
- › **Trebilco R**, Constable A, Hofmann E, Murphy E, **Melbourne-Thomas J**. Marine Ecosystem Assessment for the Southern Ocean: MEASO 2018 and beyond. IMBeR Conference 17th- 21st June, Brest, France
- › **Vince, J**. Critical Turn in Marine Spatial Planning Panel, MARE Conference, 24-28th July, Amsterdam, Netherlands

KEY NOTES

- › **Alexander, K**. Navigating our way to Marine Spatial Planning: A Global Perspective. Victorian MSP Summit, January
- › **Audzijontye, A**. Is global warming causing animals to shrink? Society of Experimental Biology Satellite Meeting, 2-5 July, Seville, Spain
- › **Fulton, EA**. Juggling biodiversity & food security – keeping all the balls in the air. FAO International Symposium on Fisheries Sustainability: Strengthening the Policy-Science Nexus, 18th-21st November Rome
- › **Fulton, EA**. Peter Larkin Memorial Lecture in fisheries science. Trials and Tribulations of Ecosystem Based Management, 10-12th September, Vancouver, Canada.
- › **Hobday, AJ**. Understanding and quantifying the state and variability of marine ecosystems. IMBeR Conference 17th- 21st June, Brest, France
- › **Hobday, AJ**. In a fast-changing world – what does good science look like? Australian Society for Fish Biology, 14-17th October, Canberra, Australia
- › **Hobday, AJ**. (2019) Climate change and adaptation in coastal ecosystems. Keynote. UCI climate change symposium. Monmouth University, April 17th, New Jersey, USA
- › **Nash, K**. Planetary Boundaries and the Sustainable Development Goals on a Blue Planet Australian Society for Fish Biology, 14-17th October, Canberra, Australia

"We are currently living through the greatest re-distribution of life of earth for at least 20,000 years. This is affecting our ecosystems, human health and even the climate itself."

Gretta Pecl
Centre for Marine Socioecology, Australia



- › **Pecl, GT**. Climate-driven species redistribution in marine coastal systems, ICES annual meeting, 9-12th September, Gothenburg, Sweden. Available on YouTube at <https://www.youtube.com/watch?v=SeK27HGUB0E&feature=youtu.be>

ICES 2019 ANNUAL SCIENCE CONFERENCE

- › **Pecl, GT**. Allan Sefton Memorial Lecture. What does climate change mean for Australia's coasts and oceans? University of Wollongong, 16th August, Wollongong, Australia.
- › **Pecl, GT**. Our Oceans in the Anthropocene, International Association of the Pan-Pacific Anthropocene, Plenary lecture. Taipei, May 2019

- ▶ **Pecl, GT.** Ocean Climate Change and the Implications for Human Health and Wellbeing, Australasian College for Emergency Medicine 2019 Annual Scientific Meeting, Plenary lecture
- ▶ **Van Putten, IE.** How difficult can it be: trade-off decisions in a time of blue economy growth. IMBeR Conference 17th- 21st June, Brest, France
- ▶ **Willis, K.** The success of local waste management to reduce plastic pollution. Stormwater New South Wales Conference, 27-29th August, Coffs Harbour NSW

INVITED SPEAKERS

- ▶ **Alexander K & Pecl GT.** Tasmanian Mediators Network – presentations on conflict & climate change, April, Hobart
- ▶ **Blanchard, J.** Why marine-terrestrial linkages matter for sustainable food systems. Interdisciplinary Centre for Conservation Science, Oxford University, 2nd October, United Kingdom
- ▶ **Blanchard, J.** Why marine-terrestrial linkages matter for sustainable food systems, Stockholm Resilience Centre/Swedish Royal Academy of Sciences, 30th August, Stockholm, Sweden
- ▶ **Blanchard, J.** Why marine-terrestrial linkages matter for sustainable food systems, Institute for Aquatic Resources, Aqua-SLU, 27th August, Sweden
- ▶ **Fulton, EA.** Building Knowledge, Capacity, and Collaborations to Develop Indicators for Ecosystem-Based Fisheries Management in Case Studies across the World. Invited webinar for the EBFM Tools Network, May 2019
- ▶ **Fogarty, HE, Pecl GT & Fulton, EA*.** Lessons and recommendations for the climate adaptation of key Tasmanian fisheries. Expert workshop on adaptive management of fisheries in response to climate change. FAO Expert workshop on adaptive management of fisheries in response to climate change, November 12-14th, Rome, Italy (*presenter)
- ▶ **McDonald, J.** (2019) Australia's approach to coastal adaptation planning, Climate Change, Coasts and Communities Symposium,. Keynote. Urban Coasts Institute climate change symposium. Monmouth University, April 17th, New Jersey, USA
- ▶ **McDonald, J.** (2019) Governing geoengineering research for the Great Barrier Reef, Monmouth University Faculty of Science Seminar
- ▶ **Melbourne-Thomas, J.** and Pinones, A. 2019. Progress and Challenges in Modelling Southern Ocean Ecosystems. Invited presentation. IMBER Open Science Conference, June 2019, Brest, France.
- ▶ **Richardson, B.** The Art of Environmental Law: How Can Aesthetics Improve Our Environmental Decisions? University of Western Cape, 5th April, South Africa
- ▶ **Richardson, B.** Time and Sustainability: What is Missing and What Does Environmental Law Need to Do? University of Cape Town, 3rd April, South Africa
- ▶ **Pecl, GT.** Ocean warming, global redistribution of species and climate communications, University of Eastern Finland, September 2019
- ▶ **Pecl, GT.** Marine climate change, ecosystems & human well-being, Norway seminar and lecture, University of Tromso, September 2019

- › **Pecl, GT.** Species on the move and communicating climate change. Tasmanian Climate Symposium, October 2019
- › **Pecl, GT.** Climate-driven species re-distribution in marine coastal systems. Coral Reefs Centre of Excellence Annual Conference, Sydney October 2019
- › **Pecl, GT.** Career Pathway Presentation and Q & A, Early Career Researcher Workshop Day. Coral Reefs Centre of Excellence Annual Conference, Sydney October 2019
- › **Willis, K.** Getting consumers to reduce, reuse and refill bottled water. CSIRO Cutting Edge Science and Engineering Symposium “Waste innovation for a circular economy”, Melbourne VIC

GENERAL PRESENTATIONS

- › **Alexander, K.** ‘Antarctic Ambassadors’ – what do we really know? Scientific Committee on Antarctic Research’s (SCAR) Standing Committee on Antarctic Humanities and Social Sciences (SC-HASS) April, Ushuaia, Argentina
- › **Alexander, K.** Conflict over marine and coastal ‘common’ resources. Australian Marine Science Association, 7-11th July, Fremantle, Australia
- › **Audzijontye, A.** Do fishes get smaller in warmer waters? ICES annual meeting, 9th-12th September, Gothenburg, Sweden
- › **Bax, N.** Reflections on an atypical decade of marine sampling. Association of Polar Early Career Scientists (APECS) International Online Conference
- › **Blanchard, J.** Addressing terrestrial limits to marine aquaculture growth. ICES annual meeting, 9th-12th September, Gothenburg, Sweden
- › **Cullen-Knox, C.** Publicised scrutiny and mediatised environmental conflict in aquaculture. MARE Conference, 24th-28th July, Amsterdam, Netherlands
- › **Cottrell, RS.** Potential for novel feeds to aid sustainable aquaculture growth. Marine Science for a Blue Economy. Australian Marine Science Association, 7-11th July, Fremantle, Australia
- › **Cottrell, RS.** Potential for novel feeds to aid sustainable aquaculture growth, Poster presentation. ICES Annual Science Conference, 9-12th September, Gothenburg, Sweden
- › **Goldsworthy, L.** Finding the Conservation in the Convention on the Conservation of Antarctic Marine Living Resources. International Polar Law Conference, 1-4th December, Hobart, Australia
- › **Haas, B.** Regional Fisheries Management Organizations and developing best practice. IMBeR Conference 17th- 21st June, Brest, France
- › **Haas, B.** Regional Fisheries Management Organizations and the Sustainable Development Goals. MARE Conference, 24th-28th July, Amsterdam, Netherlands
- › **Hobday, AJ.** (2019) Forecasting for marine resource users. GFDL/NOAA Lunchtime seminar series. April 16th
- › **Hobday AJ.** (2019) Foresighting to guide scientific investment and preparation for a disrupted future. IMBeR Open Science Meeting, June 17th-22nd, Brest, France

- ▶ **Hobday, A J.** & Gaitán-Espitia, J-D. (2019) Climate change adaptation efforts for species may be antagonistic to natural evolutionary responses. Species on the Move International Conference, 22nd-26th July, Kruger National Park, South Africa
- ▶ **Kelly, R.** Social licence for marine protected areas. MARE Conference, 24-28th July, Amsterdam, Netherlands
- ▶ **Ison, S.** Linking marine science to action: the role and utility of Outcome Mapping. IMBeR Conference 17th- 21st June, Brest, France
- ▶ **Ison, S.** Social network analysis: How do social and institutional characteristics support long-term marine conservation? MARE Conference, 24th-28th July, Amsterdam, Netherlands
- ▶ **Kelly, R.** Social licence for marine protected areas, IMBeR Conference 17th- 21st June, Brest, France
- ▶ **Kelly, R.** Recreational Fishers & Citizen Science: Stewards of the Ocean. National Recreational Fishing Conference, 10-11th December, Hobart, Australia
- ▶ **McDonald, J** et al, Adaptation pathways for conservation law and policy. Species on the Move International Conference, 22nd-26th July, Kruger National Park, South Africa
- ▶ **Mackay, M.** How psycho-social drivers are associated to responses to compliance incentives in a recreational fishery experiment. IMBeR Conference, 17th-21st June, Brest, France
- ▶ **Mackay, M.** Multiple approaches to understanding recreational fishers' management preferences. MARE Conference, 24-28th July, Amsterdam, Netherlands
- ▶ **Mackay, M.** Determining fishers' divergent management preferences in a consumptive recreational fishery. ICES Annual Science Conference, 9-12th September, Gothenburg, Sweden
- ▶ **McCormack, PC.** Keeping up with species on the move: designing more flexible conservation laws for a changing world. Species on the Move International Conference, 22nd-26th July, Kruger National Park, South Africa
- ▶ **McCormack, PC.** Reforming conservation laws for migratory marine species, Workshop on Conserving Migratory Marine Predators. Species on the Move International Conference, 22nd-26th July, Kruger National Park, South Africa
- ▶ **Pech GT** et al, How is Climate Change Altering Australia's Coasts, Ecosystems & Recreational Fishery Species? National Recreational Fishing Conference, 10-11th December, Hobart, Australia
- ▶ **Pech GT** et al, Adaptation to climate change in marine coastal systems. Species on the Move International Conference, 22nd-26th July, Kruger National Park, South Africa
- ▶ **Richardson, B.** The Art of Saving Biodiversity: Transformational Change with Aesthetics, public lecture, National Science Week, 13th August, Adelaide, Australia





CMS students and staff organised a panel for the 2019 MARE People and the Sea Conference, Amsterdam.

TOP ROW L-R, Coco, Bianca, Lisa, Sierra & Rachel.
BOTTOM ROW L-R, Cami, Mary and Emily.



MARE Conference 2019, Amsterdam

A group of CMS researchers travelled to the Netherlands in July to attend the 10th MARE People and the Sea Conference. The MARE Conference is an international marine social sciences conference that is held every two years in Amsterdam. Our CMS researchers compiled a panel together entitled 'Understanding perceptions, participatory process, and potential for effective marine management' that was led by former CMS PhD students Mary Mackay and Rachel Kelly (now both Dr's!). The panel was presented across two sessions and included presentations from Dr Maree Fudge, Bianca Haas, Sierra Ison, Coco Cullen-Knox, Dr Camilla Novaglio, Dr Emily Ogier, and Lisa Uffman-Kirsch.

- ▶ **Richardson, B.** Restoring Ecosystems: Time and Space as Critical Dimensions of Successful Governance, International Conference on Legal Opportunities for the Conservation and Restoration of Urmia Lake, 14th April, University of Tehran, Iran
- ▶ **Richardson, B.** Can Beauty Save Nature? New Thinking on Aesthetics and Environmental Law in South Africa, Environmental Law Association, 25th March Johannesburg, South Africa
- ▶ **Trebilco R, Fleming A, Melbourne-Thomas J, Meyer A*, McDonald J, McCormack PC, Anderson K, Bax N, Corney S, Dutra L, Fogarty H, McGee J, Mustonen K, Mustonen T, Norris K, Ogier E, Constable AJ, Pecl GT, Hobday A** Warming world, changing ocean: mitigation and adaptation to support resilient marine systems. AGU Ocean Sciences Conference, 16th – 21st February, San Diego, USA. (*presenter)
- ▶ **Trebilco R, Melbourne-Thomas J, Constable A.** Implications of food web change for Southern Ocean Fisheries, conservation and Carbon Export. IMBER Open Science Conference, 17th- 21st June, Brest, France
- ▶ **Trebilco R. & Pecl G.** Future Seas: challenges and emerging messages. Talk in 'Visioning Ocean Futures' workshop, IMBER Open Science Conference, 17th – 21st June, Brest, France
- ▶ **Uffman-Kirsch, LA.** fiduciary model for citizen participation in marine space decision-making, MARE Conference, 24-28th July, Amsterdam, Netherlands
- ▶ **Vince, JZ.** Effective integration and integrative capacity in marine spatial planning, MARE Conference, 24-28 June, Amsterdam, Netherlands
- ▶ **Vince, JZ.** Challenges and opportunities for Southern Ocean and Antarctic Governance. Geostrategic Futures in the Southern Ocean and Antarctica Workshop, 5-6th December, Canberra, Australia
- ▶ **Vince, JZ.** The plastic pollution crisis: constructing solutions in multilevel policy making. Ideas and Crisis Solutions Workshop, 2nd-3rd December, Melbourne, Australia

COMMITTEES, WORKING GROUPS, PANELS & NETWORKS

- ▶ **Blanchard, J.** Participant at the Stanford University “Oceans and the Future of Food” international workshop at Stanford University, Jan 29th-31st, United States of America.
- ▶ **Fulton, EA.** Participant at Expert Workshop on Adaptive Management of Fisheries in Response to Climate Change, November, Rome
- ▶ **Fulton, EA.** Contributing author on Working group 4 on individual key ecosystem services - Biomass from Fisheries: Provisioning Services and Benefits, for the UN SEEA Experimental Ecosystem Accounting Revision <https://seea.un.org/content/seea-experimental-ecosystem-accounting-revision>
- ▶ **Melbourne-Thomas, J.** Lead author for the IPCC’s Special Report on the Oceans and Cryosphere in a Changing Climate (Polar Regions chapter) and contributing author to the report’s Summary for Policy Makers, launched September 2019
- ▶ **Nash, K.** Panel Member for Tasmanian STEM State Forum ‘Gender Diversity Panel’, September, Hobart, Australia
- ▶ **Nash, K, Cottrell R and Blanchard JL.** Invited participants in the NCEAS Working Group on Environmental Impacts of Global Food Systems. Contributions to analysis and papers spanned 2018-2020 and included meetings at NCEAS in Santa Barbara in May & Oct 2019.
- ▶ **Pecl, GT.** Participated in the First Lead Author Meeting of the IPCC Working Group II Sixth Assessment Report in Durban January 2019, and the Second Lead Author Meeting in Kathmandu in July 2019.
- ▶ **Pecl, GT.** Understanding Disaster Risk Forum, Australian Institute for Disaster Resilience, October 2019
- ▶ **Pecl, GT.** Climefish invited guest, participating in two workshops on climate change adaptation and stakeholder engagement, Tromsø Norway. <https://climefish.eu/>
- ▶ **Richardson, K.** Invited participant to the ICES/FAO Working Group Meeting on Fishing Technology and Fish Behaviour, April, Shanghai, China



Kelsey Richardson presenting at the Global Ghost Gear Initiative, FAO

Global Ghost Gear Initiative

Kelsey Richardson was in Vanuatu during June, at the invitation of FAO and the Global Ghost Gear Initiative, where she talked about the global estimate of fishing gear losses. Kelsey has also been invited to participate as an expert for an upcoming GESAMP working group (group of experts on scientific aspects of marine protection) focused on sea-based sources of marine litter.

GRANTS & SCHOLARSHIPS

Alexander KA, Ogier EM, Evans, JD.

Aquaculture-Community Futures: North West Tasmania. Fisheries Research & Development Corporation - \$172,996

Corney SP, Hill NA, Holbrook NJ, **Blanchard JL**, Ziegler PE, **Welsford D**, McMahon C, Hindell MA, **Melbourne-Thomas J**. Impact of environmental variability on the Patagonian toothfish (*Dissostichus eleginoides*) fishery. Fisheries Research & Development Corporation - \$586,622

Cresswell KA, Keane JP, **Ogier EM**, **Yamazaki S**. Evaluation of the subsidy for the *Centrostephanus* fishery. Department of Primary Industries, Parks, Water & Environment Abalone Industry Reinvestment Fund - \$40,000

MacLeod C, Hurd CL, **Alexander K**, Bellgrove A, Evans B, Sanderson C. CRC Project: Seaweed solutions for sustainable aquaculture. Department of Industry, Innovation and Science CRC-P - \$2,921,653

Morrongiello J, **Audzijonyte A**, Swearer S, **Hobday AJ**, Black B. Rapidly changing life-histories and the resilience of Pacific Ocean fisheries. Australian Research Council Discovery Grant & CSIRO - \$343,000

Mowbray A, Rayfuse R, Lyster R, Gurran N, Godden L, Peel J, **Richardson BJ**, **McDonald J**. Australian Environmental and Planning Law Library. Australian Research Council Grant, Linkage Infrastructure - \$515,000

Osmundsen T, Tvetras R, **Alexander KA**. Social License to operate for aquaculture (SoLic). The Research Council of Norway Grant - \$65,369

Pecl GT. Intergovernmental Panel on Climate Change (IPCC): participation in the development of the Working Group II volume of the Sixth Assessment Report. Department of Environment and Energy (Cwth): Grant - \$22,500

Pecl GT & the Curious Climate team. Video production for Curious Climate live events. Tasmanian Climate Change Office, \$10,000

Pecl GT, Scott JL, McGee JS, Nowak BS, Lester EA, Vince JA, Norris K, de Salas KL & the Future Seas team. Future Seas: Transforming Australia into a "Marine Knowledge Nation".

Research Enhancement Program University of Tasmania: Internal Funding - \$50,000

Penesis I, Nikolova ND, Tenekedjiev KI, Negnevitsky M, **Nowak BF**, Boyd PW, Meinke HB, Stanley RA, Bowman JP, Carter CG, **Haward MG**, MacFarlane GJ, Franklin ET, Cahoon SC, Hurd CL, **Blanchard JL**, **MacLeod C**, Nguyen H-O, Bonney L, Lovell HC, Nader JP, **Fleming AN**, Fan S, Arachillage SJ, Wright JT, Fischer AM, Bridle AR, Ross DJ, Adams LR, **Vince JZ, McGee JS, McDonald J**, Levitt CJ, **Tinch DR, Anderson KC**, Adams MB, Bolch CJS, Fitzgibbon Q, Proctor R, Chin CKH, Chen S, Garaniya V, Walker JM. Blue economy CRC (2019-2028): Project Initiation. Department of Industry, Innovation and Science - \$70,000,000

Richardson AJ, **Blanchard JL**, Schoeman D, **Watson RA**, Suthers I. Future fisheries under climate change: the missing role of zooplankton (2019 - 2021). Australian Research Council - \$493,000

Tracey S, Lyle JM, Haddy JA, **Pecl GT**, Pethybridge H. Opportunities and impacts of range extending scalefish species: understanding population dynamics, ecosystem impacts and management needs. Fisheries Research & Development Corporation - \$249,587

Vince JZ. Geostrategic Futures in the Southern Ocean and Antarctica. Department of Defence grant - \$122,409

Wilcox C. et al. Improving efforts to reduce IUU fishing through expanding human capacity and implementing new tools to improve maritime surveillance. Australian Department of Foreign Affairs and Trade - \$3,300,000

Wilcox C. et al. Stocktaking of IUU fishing in Asia and the Pacific. United Nations Food and Agriculture Organization - \$191,000

AWARDS & PRIZES



1. **Beth Fulton, Alistair Hobday and Reg Watson** made it to the 'Clarivate Analytics Highly Cited List' for 2019. 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.

ABOVE Sean Tracey receiving the 2019 Recreational Fishing Award for Excellence in Support for Recreational Fishing Research Outcomes.

2. **Karen Alexander** was a part of the Salmon Environmental Interactions Team who were awarded the College of Science and Engineering & University of Tasmania Research Award

3. **Beth Fulton** was the recipient of the K. Radway Allen Award; the highest honour awarded by the Australian Society for Fish Biology recognising Beth's outstanding contributions in fish and fisheries science.



Beth Fulton, recipient of the K. Radway Allen Award.

4. **Bianca Haas** was one of 5 global recipients of the Marine Stewardship Council Scholarship Research Program providing funding to attend two key fisheries commission meetings in Vanuatu and Papua New Guinea.

5. **Julia Blanchard** was awarded the Swedish Agricultural University (SLU) Visiting Scholar award.

6. **Maree Fudge** won the best presentation at the CMS showcase for her talk "Revisiting legitimacy of participation in marine governance and decision-making."

7. **Kirsty Nash** was recognised as a runner up for Nature journals Inspiring Scientist Award <https://www.nature.com/collections/jcpgfhmqzlz/shortlist>



Bianca Haas, 2019 recipient of the prestigious Marine Stewardship Council Scholarship Research Program Award.

8. **Kirsty Nash** was nominated for the Journal of Applied Ecology Editors' 'Rising Star in Ecology'.



Congratulations to **Sierra Ison**, CMS PhD student working on understanding social dynamics of conservation programs, who was awarded a Green Talents Award in Berlin. Sierra was one of just 25 researchers selected worldwide from hundreds of applicants for the prestigious International award. Recent CMS PhD graduate **Rachel Kelly** – a winner of Green Talents in 2018 – was selected as one of the 50 outstanding alumni that a special jury selected to join the Green Talents Networking Conference 2019 in Berlin, during October. This amazing opportunity is fully funded and is part of the 'International Forum for High Potentials in Sustainable Development'.



ABOVE Jess Melbourne-Thomas receiving the Alumni Achievement Award for distinguished service in the fields of ecosystem & climate change research.

9. **Kirsty Nash** co-authored a paper recognised as 1 of 10 remarkable papers of 2019 by Nature. The paper was - Hicks CC, Cohen PJ, Graham NA, Nash KL, Allison EH, D'Lima C, Mills, DJ, Roscher M, Thilsted SH, Thorne-Lyman AL, MacNeil MA (2019) Harnessing global fisheries to tackle micronutrient deficiencies. *Nature*, 574(7776):95-98. <https://doi.org/10.1038/s41586-019-1592-6>

10. **Rachel Kelly** was recognised by the College of Science and Engineering, University of Tasmania Outstanding Performance by PhD Candidate Award.

11. **Rachel Kelly** won the best Elevator Pitch at the Green Talents 10th Anniversary Conference in Berlin for her pitch titled 'Citizen science - linking and empowering people to protect nature'.

12. **Mary Mackay** received the best student paper award at MARE People and the Sea Conference, Amsterdam for her paper 'Determining management preferences in a multi-method consumptive recreational fishery' (2020), *Ecology & Society* (accepted).

13. **Maree Fudge** won the CMS Showcase best presentation award for her presentation "Revisiting legitimacy of participation in marine governance and decision-making".

14. **Jess Melbourne-Thomas** received the Alumni Achievement Award for distinguished service in the fields of ecosystem & climate change research, University of Tasmania.

15. **Kathy Willis** won the CMS Showcase best poster award for her poster titled 'Can Installing water refill stations reduce single-use plastic bottle litter?'

The IMAS Tuna Champions project (led by CMS member **Sean Tracey**) took out the 2019 Recreational Fishing Award for Excellence in Support for Recreational Fishing Research Outcomes, in recognition of the project's contribution to recreational fishing research.

Project leader, Associate Professor Sean Tracey said the idea for the Tuna Champions arose while working closely with recreational anglers on a Southern Bluefin Tuna post-release survival project.

Funded by the Australian Government through the Fisheries Research and Development Corporation, this communication and education project is inspiring behavioural change in the recreational fishing community.

OTHER OUTPUTS & ACHIEVEMENTS

- ▶ **Gretta Pecl** was nominated as an Honorary member of the Indigenous Peoples' and Community Conserved Territories and Areas Consortium (ICCAs). This is a group that promotes the appropriate recognition of, and support to, the territories and areas conserved by Indigenous and local communities.
- ▶ Congratulations to our former CSIRO Research Director and current Honorary Fellow, **David Smith**, who has been appointed as a Commissioner with the Australian Fisheries Management Authority from 1 July 2019 for a period of four years. The AFMA Commission is responsible for advice around domestic fisheries research and management and David will bring a wealth of experience to that role.
- ▶ Research from **Eva Plaganyi, Gretta Pecl** and **Alistair Hobday** was cited in the UK Houses of Parliament report on climate change and fisheries. POSTNote - UK Gov briefing on Climate Change and Fisheries (<https://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-0604>)
- ▶ **Dr Chris Wilcox** was invited as an expert for the project 'Developing a global fishing index' and 'developing a fisheries governance indicator with the Minderoo Foundation.
- ▶ **Dr Jess Melbourne-Thomas** was invited to give the Occasional Address at the 2019 UTAS CoSE Science & Engineering Graduation (where a number of CMS students graduated). Jess used the platform to speak about action on climate change https://livestream.com/universityoftasmania/events/8909168/videos/199990209?fbclid=IwAR3RoihfEkpPtcdsF_KZvjy11XALdtw6FGkR-i7vBTjJ33VP7SJccRwrFiA
- ▶ **Professor Jan McDonald** and **Dr Phillipa McCormack** gave evidence at a Senate Committee Inquiry into Australia's Faunal Extinction Crisis, appearing before the Committee at the Hobart hearing on 4 February 2019.
- ▶ **Beth Fulton** was invited to give the Occasional Address at the UNSW Science Graduation Ceremony May 14th, 2019.



The CMS family expanded with some non-academic but very precious outputs with high impact factors – congratulations to Cecilia Villanueva, Rich Cottrell, Rowan Trebilco and Julia Blanchard for beautiful new additions to their respective families!



TOP ROW: Sofi & Raya

BOTTOM ROW: Myrtle & Jordi

- Dr Rowan Trebilco co-authored a report from the EU-Australia leadership forum titled “Recommendations on the future of EU-Australia relations”. Produced by the representatives of the 2018 Eu-Australia Emerging Leaders”. (<https://www.europeaustraliaforum.eu/publications-and-reports>)



- Dr Jo Vince has been appointed to the Victorian Marine and Coastal Council's Science Panel. The multi-disciplinary Panel is an advisory group to the Council for the scientific and technical aspects of coastal and marine management in Victoria. During 2019 and 2020, a major focus for the Council and the Science Panel will be contributing to the development of the Marine and Coastal Policy including the Marine Spatial Planning Framework and the Marine and Coastal Strategy.



Image credit: Rowan Trebilco

PUBLIC OUTREACH



- › **Kelly, R.** Social licence in the marine realm. Presented to the 'School for Seniors' in Hobart, April
- › **Melbourne-Thomas, J.** Transformative change: a view to the future. Diversity, science & policy. National Science Week public event on transformative change for biodiversity conservation. August 2019, Adelaide, South Australia.
- › **Melbourne-Thomas, J.** Antarctica, climate change and women in STEMM. Presidents' Dinner Address, Australian Water Association. July 2019, Hobart, Tasmania.
- › **Melbourne-Thomas, J.** COOL JOBS: Antarctica (TedX style presentation to an audience of 1500 high school students). World Science Festival Brisbane, Queensland, March 2019.
- › **Pecl, G.** Invited speaker at the March for Science, Hobart, May 4th, 2019
- › **Richardson, K.** Invited Speaker at Sustainability in the Pub, Hobart with the topic 'Hot Fish'. Kelsey was a part of a panel discussing current efforts combating the impacts of global warming on the fishing industry.
- › **Willis, K. & Vince, J.** Invited Speakers, Sustainability in the Pub, Launceston for the topic 'Breaking up with Plastics'.
- › **Willis K.** Participated in the CSIRO 'STEM in Schools' event, local Tasmanian primary school, 30 October
- › CMS World Oceans Day video: https://www.youtube.com/watch?v=wzT_u5dl4LU&feature=emb_logo



KATHRYN WILLIS & DR DENISE HARDESTY



PROF STEWART FRUSHER

- Curious Climate was a major outreach activity led by CMS, involving around 30 scientists in presentations, media interviews or production of presentation materials over July and August. Over 300 questions were submitted by the public and we answered the most popular 8 questions in each region of Tasmania. Videos from the events are available at www.curiousclimate.org.au



Scientists road-tripping to answer the public's questions about climate change. **FROM LEFT** Rachel Kelly, Gretta Pecl, David Mossop, and Stuart Corney



- CMS in collaboration with Redmap Australia (www.redmap.org.au) and many organisations throughout Tasmania developed and released packs of playing cards to help connect and educate Australians with marine wildlife. The playing cards, developed by **Cayne Layton**, **Gretta Pecl** and John Keane, featured species known to be shifting their geographical range due to the effects of climate change. The cards have been a very popular and successful tool to connect with the general public and highlight local impacts from climate change.

MEDIA

- Alexander, K.** A deeper understanding of societal support can provide the fishing and aquaculture industry with a greater chance of achieving the outcomes they want. FISH, Vol 27(3) <https://www.frdc.com.au/media-publications/fish/FISH-Vol-27-3/Supported-by-society>
- Babcock, Richardson A, **Fulton EA**, **Plaganyi E**, Bustamante R, Extreme weather caused by climate change has damaged 45% of Australia's coastal habitat. <https://theconversation.com/extreme-weather-caused-by-climate-change-has-damaged-45-of-australias-coastal-habitat-120671>
- Bax, N.** 'In Antarctica, the #MeToo Movement Faces Unique Hurdles'. Buzzfeed: In Antarctica, The #MeToo Movement Faces Unique Hurdles
- Bax, N.** 'We need to protect Antarctic Blue Carbon'. Wired opinion: we need to protect Antarctic Blue Carbon
- Bax, N.** 'What's up down deep?' Hobart Magazine science interview March edition

- ▶ **Blanchard, J.** ABC Radio Breakfast, Interview about AquaKulture Performance, and role of aquaculture for food security
 - ▶ **Cottrell, R.** Food shock increasing globally, say researchers, What's New in Food Technology blog, <https://www.foodprocessing.com.au/content/food-design-research/news/food-shock-increasing-globally-say-researchers-768997803>
 - ▶ **Hobday, A.** Marine heatwaves threatening oyster industry and affecting Great Barrier Reef, scientists warn. ABC interview https://www.abc.net.au/news/2019-11-25/marine-heatwaves-threaten-oyster-industry-great-barrier-reef/11726630?utm_source=sfmc&utm_medium=email&utm_content&utm_campaign=%5Bspecialist_sfmc_27_11_19_science%5D%3A125&user_id=0fa5f1562c5e48a18c5f2b30b8c28d8b466e5817e6bd57b9b62ca7dd4f607d15&WT.tsrc=email&WT.mc_id=Email%7C%5Bspecialist_sfmc_27_11_19_science%5D%7C125an+in+crease+in+the+number%2C+duration+and+severity+of+marine+heatwaves&fbclid=IwAR17Vw-zT7jPg5tgOSYFu72EkO7H6dUugc_ptck0xl2Wt3YjB3evFL0Fq7s
-
- ▶ **Hobday, A.** Climate change is forcing coral reef fish to move south. [thenewdaily.com.au](https://thenewdaily.com.au/news/national/2019/11/21/climate-change-coral-reef-fish/?fbclid=IwAR3PIIDJ05pUuKGo-r8KU7lVp5NMLyUjskZSkVbxazFNkXv3ciUGD4cDxo) <https://thenewdaily.com.au/news/national/2019/11/21/climate-change-coral-reef-fish/?fbclid=IwAR3PIIDJ05pUuKGo-r8KU7lVp5NMLyUjskZSkVbxazFNkXv3ciUGD4cDxo>
 - ▶ **Kelly, R.** Blog for 'i2insights' (10 tips for next generation interdisciplinary research) - <https://i2insights.org/2019/10/01/10-tips-for-interdisciplinary-research/>
 - ▶ **Kelly, R.** Blog for 'Ecology for the Masses' (Extending ecology – 10 tips for interdisciplinary research) - <https://ecologyforthemasses.com/2019/12/30/extending-ecology-10-tips-for-interdisciplinary-research/>
 - ▶ **McDonald, J.** Our nature laws are being overhauled. Here are 7 things we must fix. <https://theconversation.com/our-nature-laws-are-being-overhauled-here-are-7-things-we-must-fix-126021>
 - ▶ **McCormack, P.** interviewed on ABC local radio on 6 February 2019 with Ryk Goddard about the Australian Senate Inquiry into Australia's Faunal Extinction Crisis
 - ▶ **Melbourne-Thomas, J.** McInnes K, Bindoff N, Abram N, A landmark report confirms Australia is girt by hotter, higher seas. But there's still time to act. The Conversation. <https://theconversation.com/a-landmark-report-confirms-australia-is-girt-by-hotter-higher-seas-but-theres-still-time-to-act-124096>
 - ▶ **Melbourne-Thomas, J.** Jess Melbourne-Thomas leads the way for women in science. The Mercury. <https://www.themercury.com.au/lifestyle/tasweekend-jess-melbournethomas-leads-the-way-for-women-in-science/news-story/cc5aaf09571553144c4e0910ee52b953>
 - ▶ **Melbourne-Thomas, J.** Marine scientist Jess Melbourne-Thomas names Tasmania's Australian of the year for 2020. The Mercury. <https://www.themercury.com.au/news/tasmania/marine-scientist-jess-melbournethomas-named-tasmanias-australian-of-the-year-for-2020/news-story/b6a972410b4b32c20438061708941e26>

- ▶ **Melbourne-Thomas, J.** Female Scientists, TAS Aussie of the Year. Canberra Times. <http://www.canberratimes.com.au/story/6446668/female-scientist-tas-aussie-of-the-year/>
- ▶ **Melbourne-Thomas, J.** Interview on ABC and SBS news about IPCC SROCC release, 26th September 2019 <https://www.dropbox.com/sh/pykiq48gimjueqg/AADBpywO967xLbfHtUYYjTrYa/20190926-SBSNews-IPCC-SROCC.mp4?dl=0> <https://www.dropbox.com/sh/pykiq48gimjueqg/AABuGKlTPN3GDDDeqAvW5yyoa?dl=0&preview=20190926-ABC+Hobart+Mornings-JMT-IPCC+SROCC.wma>
- ▶ **Nash, K.** Interviews in The Mercury and The Examiner about the launch of aKIDemic Life in March.
- ▶ **Nash, K.** Interview on Radio ABC Hobart December 2019 about Nature's 10 remarkable papers of 2019 (<https://www.abc.net.au/radio/hobart/programs/breakfast/remerkable-science-kirsty-nash/11828740>)
- ▶ **Nash, K.** Interview on Radio ABC Hobart March 2019 about launch of aKIDemic Life
- ▶ **Nash, K.** Blog on the Methods in Ecology and Evolution Blog on aKIDemic Life. <https://methodsblog.com/2019/10/23/akidemic-life/>
- ▶ **Nash, K.** Interview for the NCEAS newsletter. <https://www.nceas.ucsb.edu/news/big-picture-climate-friendly-diet>
- ▶ **Pecl, G.** 'Species on the Move'. Interview with Gothenburg news. <https://goteborg.etc.se/inrikes/forskaren-dykt-upp-mycket-snabbare-nagon-forutspatt>
- ▶ **Pecl, G.** 'What does climate change mean for our coasts and oceans?' Illawarra Mercury. <https://www.illawarramercury.com.au/story/6329338/uow-event-explores-what-climate-change-means-for-our-coasts-oceans/>
- ▶ **Pecl, G.** Warming waters are increasing costs for fisherman along India's Malabar Coast, World Economic Forum, <https://www.weforum.org/agenda/2019/02/warming-waters-heat-up-fishing-costs-along-india-s-malabar-coast>
- ▶ **Pecl, G.** Out of the box: Reckoning with a global species shift. https://www.examiner.com.au/story/6259152/out-of-the-box-reckoning-with-a-global-species-shift/?cs=12&fbclid=IwAR1_qkaTNisnSxqDRjqWfILZv7auZtzJbfnlW-rBw2RfgH96QDKst4j9xUY



DBIMAGES/ALAMY STOCK PHOTO

Fishing fleets have doubled since 1950—but they're having a harder time catching fish

By Erik Stokstad | May. 27, 2019, 3:00 PM

- ▶ **Rousseau, Y.** Fishing fleets have doubled since 1950—but they're having a harder time catching fish. Coverage of Yannick's PNAS paper in Science Magazine <https://www.sciencemag.org/news/2019/05/fishing-fleets-have-doubled-1950-theyre-having-harder-time-catching-fish#>
- ▶ **Vince, J.** 'Tasmania's container refunds now almost reality after 15 years on'. The Examiner Newspaper. <https://www.examiner.com.au/story/6205295/cash-for-containers-how-did-we-get-here/>

In addition, the CMS-led Curious Climate project led to extensive media coverage of climate change issues, for example:

- Curious Climate forum prompts 'great conversations' about the future, <https://www.abc.net.au/radio/northtas/programs/drive/curious-climate/11384548>
- How much has Tasmania's climate changed in the 100 years to now? <https://www.abc.net.au/news/2019-07-26/climate-change-measurable-impacts-in-tasmania/11338326>
- 'Hasn't climate change always happened?' Scientists address the big questions <https://www.abc.net.au/news/2019-07-12/scientists-respond-to-climate-sceptics/11299064>
- Climate change: We haven't experienced anything like this in the past 2,000 years <https://www.abc.net.au/news/2019-07-25/climate-change-nothing-like-this-over-past-2000-years-scientists/11345022>
- Eating meat or going vegan: Which diet is best for the planet? <https://www.abc.net.au/radio/hobart/programs/mornings/curious-climate-1/11277472>
- Curious Climate: Scientists respond to climate change sceptics, <https://www.abc.net.au/radio/hobart/programs/mornings/curious-climate-sceptics/11299646>
- Curious Climate: The human health impacts, <https://www.abc.net.au/radio/hobart/programs/mornings/curious-climate-health-impacts/11338738>
- Curious Climate: will rising seas change our coastline? <https://www.abc.net.au/radio/hobart/programs/saturdays/curious-climate-coastlines/11381976>



Image credit: Rowan Trebilco

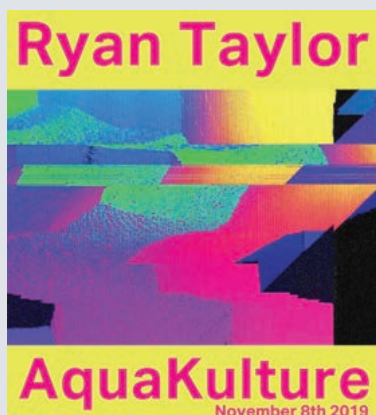
CMS EVENTS



Visiting scientist Sally Carson from Otago University, New Zealand

CMS VISITING SCIENTIST SEMINARS

- › Ahjond Garmestani, US Environmental Protection Agency, United States, Transdisciplinary research in practice – what, when, why?, 28th Oct
- › Clara Obregón, Murdoch University, Australia, The social-ecological dimensions of a small-scale crab fishery in Western Australia, 12th Dec
- › Jason Link, NOAA, United States, Advancing Ecosystem Based Fisheries Management in the United States, 13th Nov
- › Max Boycoff, University of Colorado, United States, Creative (Climate) Communications, 28th Nov
- › Libby Liggins, Massey University New Zealand, Citizen science and taking stock of biodiversity, April
- › Steven Lade, Stockholm University Sweden, Interactions between the planetary boundaries, 10th Jul
- › Sally Carson, Otago University New Zealand, Can citizen science drive more than student learning? Perspectives from Southern New Zealand, 23rd Aug
- › Tatiana van Steveninck, Leiden University, Interdisciplinary Research: Motivations, success and organizational support, 11th Jul
- › Nick Graham, Murdoch University, Australia, Lessons from coral reef devastation reorganisation, 25th Nov
- › Tiffany Morrison, James Cook University, Australia, A new governance paradigm for coral reefs under climate change, 3rd Dec



OTHER EVENTS

Aquakulture – sci-art performance and collaboration with jazz musician Ryan Taylor

Aquakulture is a multimedia performance and album (available on [spotify.com](https://open.spotify.com/album/1a2b3c4d5e6f7g8h9i0j)) by British composer and performer Ryan Taylor that was developed in collaboration with researchers A/Prof Julia Blanchard and Prof Duncan Cameron at the Institute for Sustainable Food at the University of Sheffield, UK. The performance held at IMAS on Nov 8th, 2019 was two years in the making and explored the rapidly changing nature of aquaculture, it's connection to land and sea food systems, single issue environmentalism, and deeply rooted attitudes,

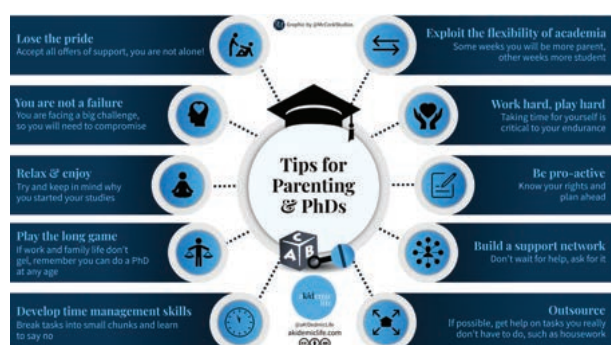


Catriona Macleod and Julia Blanchard with the AquaKulture team

perceptions and beliefs in our post-truth era of misinformation. It also featured a lively Q & A session with Ryan Taylor and researchers Julia Blanchard, Duncan Cameron, Catriona Macleod and facilitated by CMS Director Gretta Pecl. There is also a mini documentary here: <https://vimeo.com/372819451>.

Size Spectrum Modelling Training Course and Symposium, Swedish Agricultural University, Lysekil, Sweden, Sept 6-8, 2019 (organisers: Julia Blanchard, Ken Andersen, Gustav Delius, Asta Audzijonyte, Anna Gardmark)

This course and workshop was an official side event of the ICES Annual Science Conference. The course provided an introduction to 'mizer' modelling package to a range of researchers from government including NOAA, Cefas, IRD, NIWA, CSIRO, IMR Norway and international academic institutes spanning all career stages. Recent research advances were also presented including climate change applications, eco-evolutionary components, and human components such as fisheries fleet dynamics and bioeconomics.



Launch of aKIDemic Life on 5th March 2019 at Government House
aKIDemic Life is a new website developed to

help parents cope with the twin pressures of parenthood and academia. The website was designed and built by CMS researcher Dr Kirsty Nash who, having experienced the challenges of returning to work after maternity leave, wanted to empower and connect thousands of carers and parents around the world working in academic settings. In celebration of International Women's Day, <https://akidemiclife.com/> was launched in Hobart in March by the Governor of Tasmania, Professor Kate Warner, who raised a family while a senior academic in the University's Faculty of Law.

Interdisciplinary marine research – communication and climate change.

Presentations and workshop for PhD students as part of the European Molecular Biology Laboratory PhD course in Hobart

Editorial Processes Demystified workshop sessions – Tromsø, Hobart and Launceston.

The process of submitting your manuscripts, particularly the first few of your career, can seem like a pretty daunting challenge. Additionally, the whole review process can appear quite mysterious – who do they invite to review and why, why does it take so long to hear a decision, how do the editors balance divergent views and why oh why did they send it back out to review AGAIN? How much effort should you put into a cover letter and when is it ok to challenge an editor's decision (and how do you do that politely?). Is it bad manners to email and ask why your paper is taking so long? Questions like this and many more were answered for PhD students and early career researchers by panels of experienced editors at several two-hour workshops, led by Professor Gretta Pecl.

Goal setting and measuring impact for CMS

Internal CMS Impact workshop led by Dr Chris Cvitanovic, Tuesday, 21st May.

Understanding China's aspirations in the Southern Ocean

workshop organised by Goldsworthy L, Haward M and McGee J, 5th December, Institute for Marine and Antarctic Studies, UTAS. This workshop was designed to bring a broad range of stakeholders together to better understand China's policy aspirations for engagement in the Southern Ocean, to explore ways to build and strengthen collaboration with

China around CCAMLR policy, and to consider opportunities for Australia to work with China to progress shared goals. The workshop therefore sought to clarify China's interests and aspirations in the Southern Ocean, gain understanding of areas of shared and differing interests between China and other CCAMLR countries, and generate ideas on improving cooperation between China and other states in the Southern Ocean. There were 69 registered participants, including staff from Lapland University (Finland), the Swedish Diplomatic service, Shanghai University, University of Canterbury (NZ), CCAMLR Secretariat, Australian Antarctic Division, CSIRO, Tasmanian government, Australian Strategic Policy Institute (ASPI), Australian Border Force, Commonwealth Department of Agriculture, Commonwealth Department of Foreign Affairs, Defense, Geoscience Australia, University of Tasmania, La Trobe University, Adelaide University, University of NSW (Australian Defense Force Academy).



Indigenous and Traditional Knowledge Film Event.

As part of the Future Seas Workshop in November 2019, the Traditional and Indigenous Working Group participants were invited to present short films about their research or from their communities. We were treated to an amazing diversity of educational and beautiful films throughout the evening. Films included:

- On the wings of the raven – film on the life and career of Future Seas participant Eero Murtomäki
- An unbroken string - Film from the Tasmanian Indigenous community, introduced by **Dean Greeno**
- Indigenous management of fisheries in Senegal
- Edge of the knife, film from the Haida community, introduced by Chief Russ Jones

GRADUATED PHD STUDENTS

CMS is thrilled to announce the graduations of the first crop of amazing CMS PhD students in 2019:

- Mary Mackay (Scotland),
- Rachel Kelly (Ireland),
- Rich Cottrell (UK),
- Joseph Wenta (Australia)
- Yannick Rousseau (France)
- Larelle Bossi (Australia) and
- Maree Fudge (Australia).



Some of the Centre's first graduates: Dr Mary Mackay, left and Dr Rachel Kelly, right, together with Professor Gretta Pecl, centre.



FUTURE EVENTS FOR 2020

Image credit: Rowan Trebilco

- CMS Summer School: 30 participants from 10 countries have enrolled in our “Interdisciplinary Skills for Equitable Climate Adaptation in Socioecological Systems” week long summer school, coordinated by Dr Rachel Kelly, and facilitated by Professor Eddie Allison (University of Washington). The summer school will draw on the wealth of expertise existing within the CMS, and aims to connect and inspire young researchers to develop the interdisciplinary thinking and skills needed to address the social and environmental issues of climate change.



- Cecilia Villanueva from CMS and Alejandro Gatto from CESIMAR (Argentina) will be teaching the workshop “Open-source spatial conservation of seabirds: an introduction to using open-data, open-source GIS software and basic spatial analysis tools” at the 3rd World Seabird Conference to be held in Hobart in October 2020.
- Prof Gretta Pecl has been invited to participate in the National Center for Ecological Analysis and Synthesis (NCEAS) 2020 working group on Operationalizing climate resilience in marine fisheries management. <https://www.nceas.ucsb.edu/workinggroups/snapp-operationalizing-climate-resilience-marine-fisheries-management>
- In April 2020, CMS will be running an intersectionality workshop for its members: Walking in the Shoes of Others, designed by Thomas et al 2020:
- Upcoming Presentation: **Uffman-Kirsch, L.**, Marine Sustainability from the Bottom Up: Social License to Engage and the Public Trust Doctrine, Athens Institute for Education and Research 17th Annual International Conference on Law, 13-16 July 2020, Athens, Greece.

VISITING SCIENTISTS & COLLABORATORS



CLOCKWISE FROM TOP LEFT

AHJOND GARMESTANI, US EPA, United States
CRAIG ALLEN, University of Nebraska, United States
CLARA OBREGÓN, Murdoch University, Australia
DUNCAN CAMERON, University of Sheffield, UK
EERO MURTOMÄKI, Elder, Finland
HALFDAN PEDERSEN, Translator, Greenland
JANET NYE, Stonybrook, United States
JASON LINK, NOAA, United States
KAISU MUSTONEN, Snowchange, Finland
LIBBY LIGGINS, Massey University, New Zealand
MAX BOYCOFF, University of Colorado, United States
MIBU FISCHER, CSIRO Brisbane, Australia
NICK GRAHAM, Lancaster University, Australia

NUUNOQ FREDERIKSEN, Greenland
RITA LUKKARINEN, Snowchange, Finland
CHIEF RUSS JONES, Council of the Haida Nation, Canada
RYAN TAYLOR, Jazz Musician, UK
SALLY CARSON, Otago University, New Zealand
STEVEN LADE, Stockholm University, Sweden
SUTEJI HUGU, TAO Foundation, Lanyu Island, Taiwan
TATIANA VAN STEVENINCK, Leiden University, Netherlands
TIFFANY MORRISON, James Cook University, Australia
ROB STEPHENSON, DFO, St Andrews Biological Station, New Brunswick Canada
TERO MUSTONEN, Head of Selkie village in North Karelia, Finland

ANNEX

STEERING COMMITTEE

Beth Fulton, CSIRO
Alistair Hobday, CSIRO
Richard Coleman, UTAS IMAS
Terry Bailey, UTAS IMAS

Ingrid van Putten, CSIRO
Jan McDonald, UTAS
Joanna Vince, UTAS
Jenn Scott, UTAS

Dugald Tinch, UTAS
Ian Dutton, DPIPW
Jonny Stark, AAD
Martin Excel, Austral Fisheries

STUDENT REPRESENTATIVES

Sierra Ison
Bianca Haas

EXECUTIVE SUPPORT

Cecilia Villanueva
David Mossop
Madeline Green

SOCIAL MEDIA TEAM

Mary Mackay
Rachel Kelly
Liam Fullbrook

THEME LEADERS

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

CMS MEMBERS & COLLABORATORS

Adam Smith
Anna Farmery
Andrew Constable
Andrew Harwood
Andy Stevens
Asta Audzijonyte
Aysha Fleming
Benjamin Richardson
Beth Penrose
Bill de la Mare
Camilla Novaglio
Cara Stitzlein
Catriona MacLeod
Cayne Layton
Cecilia Villanueva
Chris Cvitanovic
Chris Wilcox
Christelle Auguste
Corrine Condie
Dale Maschette
Darla Hatton MacDonald

David Mossop
David Smith
Denise Hardesty
Dirk Welsford
Elizabeth Lester
Emily Ogier
Eva Plaganyi-Lloyd
Fabio Bochetti
Fred Gale
Geoff Syme
Gretta Pecl
Heather Hunt
Heidi Auman
Jan Shaw
Janey Nye
Jason Major
Javier Porobic
Jeffrey Dambacher
Jeffrey McGee
Jemina Stuart-Smith
Jennifer Lavers

Jess Melbourne-Thomas
Jonathan Reum
Julia Blanchard
Julie Davidson
Karen Alexander
Keith Sainsbury
Kerryn Brent
Kirsty Nash
Leo Dutra
Louise Adams
Madeline Green
Marcus Haward
Maree Fudge
Mark Hemer
Mary-Anne Lea
Mohammed Mofizur Rahman
Narissa Bax
Neil Holbrook
Olivia Johnson

Peat Leith
Pedro Fidelman
Phillipa Cohen
Phillipa McCormack
Piers Dunstan
Rachel Nichols
Reg Watson
Rich Little
Rowan Trebilco
Sarah Jennings
Satoshi Yamazaki
Scott Condie
Sean Pascoe
Sean Tracey
Stewart Frusher
Stuart Corney
Tony Smith
Valeriya Komyakova
Vanessa Adams

CMS STUDENTS

Angela Abolhassani
Bianca Haas
Carla Sbrocchi
Clara Obregón
Caterina Goncalves
Cloe Cummings
Coco Cullen-Knox
Clare Pitt
Danielle Smith
Dean Greeno

Dimuthu Jayakody
Elisavet Spanou
Florence Briton
Giarn Carroll
Hannah Fogarty
Joseph Wenta
Kathy Willis
Katie Marx
Kelsey Richardson
Larelle Bossi

Lauchlin Wilkinson
Liam Fullbrook
Linda Hunt
Lisa Uffman-Kirsch
Lynda Goldsworthy
Lynna Cortes Rueda
Lynnlee Chikudza
Mary Mackay
Michael Murunga
Mohammad Khodajouei

Niyomi Pethiyagoda
Peter Puskic
Rachel Kelly
Richard Cottrell
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Sheryl Hamilton
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Tormey Reimer
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