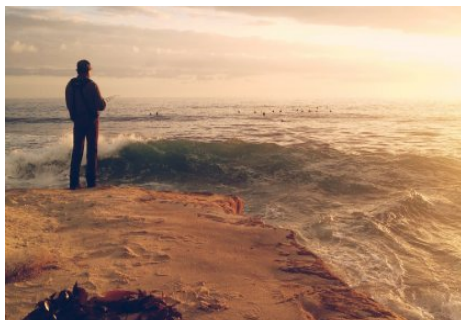




CARM NEWS *March 2020*

RECENT IMPACT

New project examining the impact on the abundance and population dynamics of Queensland fishery species – snapper, pearl perch, and spanner crab



CARM was featured in the UQ News on the 20 January, 2020 with an article titled, "How do environmental factors impact Queensland's fisheries?" In the article, Professor Filar explained that CARM specialises in undertaking high quality research to inform high quality management of our natural resources.

The project is co-funded by the [Fisheries Research and Development Corporation](#), a UQ multi-disciplinary team of scientists, the [Department of Agriculture and Fisheries](#), and the [Australian Institute of Marine Science](#). [Read the full story](#)

Samara French's Thesis used for Assessment



Former CARM honours student Samara French will have her thesis used for the Assessment of Hammerhead Sharks across Northern Australia. Samara is pursuing PhD studies at James Cook University and assisting Tony Courtney from DAF, on a casual basis, with the 2019 scallop data analysis.

Great Hammerhead Shark (Sphyrna mokarran)
Copyright Karl Dietz

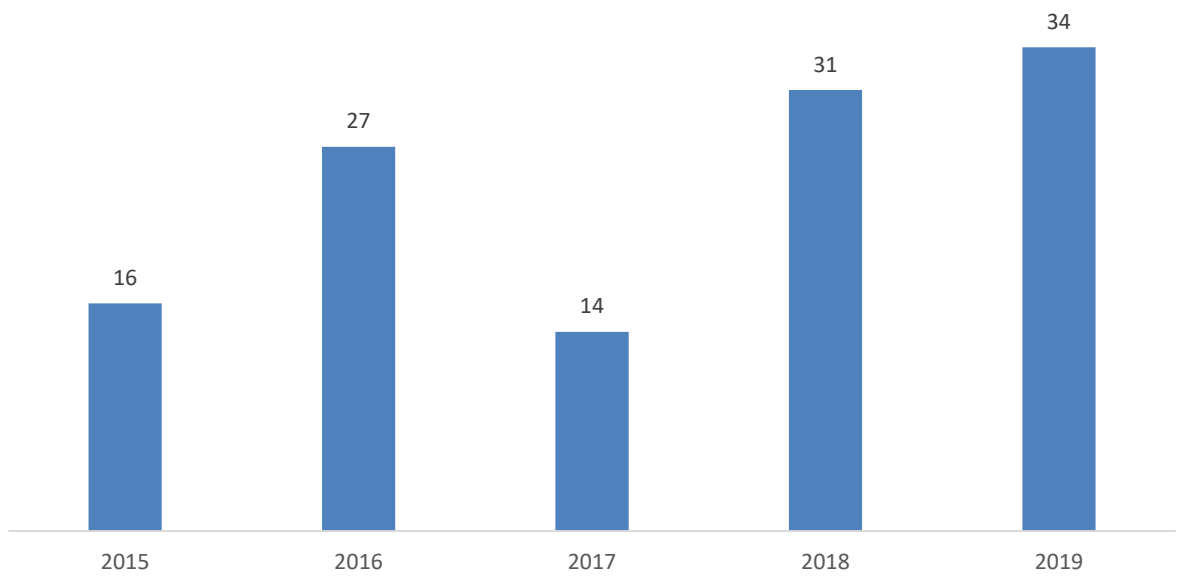
CARM 2015 – 2019 Publications Summary Data

Since 2015, CARM authors have produced 122 documents with the year 2019 producing 581 citations to CARM publications. The following graphics show CARM Publications and Citations to CARM publications and Policy documents citing CARM publications and Altmetrics.

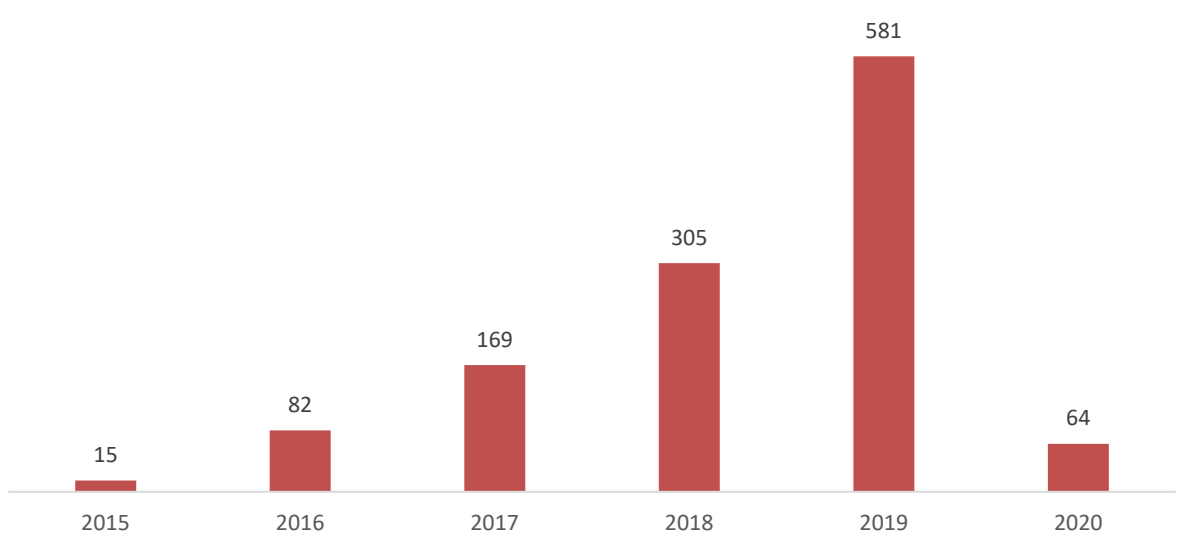


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CARM publications 2015-2019



Citations to CARM publications





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Policy documents citing CARM publications	Year	Country	Number of mentions
Great Barrier Reef outlook report 2019	2019	Australia	3
This is a crisis: facing up to the age of environmental breakdown	2019	Australia	2
Mineral resource governance in the 21st century	2020	Australia	1
Inheriting the Earth? The unprecedented challenge of environmental breakdown for younger generations	2019	Australia	1
Trade in environmentally sound technologies: implications for developing countries	2019	Australia	1
The IPBES assessment report on land degradation and restoration	2019	Australia	1
Lethal consequences: climate change impacts on the Great Barrier Reef 2018		Australia	1
The state of world fisheries and aquaculture 2018	2018	Australia	1
CME Pacific Marine Climate Change Report Card 2018 Scientific Review: Seagrass	2018	United Kingdom	1
CME Pacific Marine Climate Change Report Card 2018 Scientific Review: Climate Change Overview	2018	United Kingdom	1
UK Fisheries Management	2018	United Kingdom	1
Adapting to climate change in New Zealand: Stocktake report from the Climate Change Adaptation Technical Working Group	2017	Australia	1
Australia state of the environment 2016: overview	2017	Australia	1



The number of mentions from each source that Altmetric has tracked for CARM research outputs for the 2015 -2019 period



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WELCOME TO CARM

CARM welcomes our 2020 Honours students

Erin Medland

Improving the stability of a system of non-linear PDEs

Nick Outram

Maximum economic versus sustainable yield in multiplicative harvest models

Bryce Stansfield

Numerical solutions of a system of non-linear PDEs

Thomas Graham

Stochastic games with incompetent players



CARM welcomes **Manuela Mendiolar** as our newest PhD scholar who was awarded an UQ International Scholarship. Manuela comes to CARM with a degree in Mathematics from Universidad Nacional de Mar del Plata, Argentina and five years' experience from the in the National Institute of Fishing Research and Development – INIDEP - Mar del Plata, Argentina.



CARM welcomes **Zhihao Qiao** as a PhD scholar after spending time at CARM as an Occupational Training Student. Zhihao graduated from the Australia National University in 2016, with a first honour degree in Mathematics. Zhihao is working in the field of stochastic modelling and numerical optimisation.



CARM welcomes **Associate Professor Roger Cropp** as an Adjunct Professor in the Centre. Roger's most recent publication acknowledging CARM;
Bates, M.L., Hawker, D.W., **Cropp, R.** (2019). Spatio-temporal variations in hexachlorobenzene partitioning in a near shore Antarctic marine environment from a one-dimensional coupled eco-system-chemical model, *Journal of Marine Systems*, 196:65-76

CONGRATULATIONS TO GRADUATING STUDENTS

Congratulations to Matthew Holden's Honours students Jakeb Lockyer and Samuel Nolan for graduating in the 2019 cohort.



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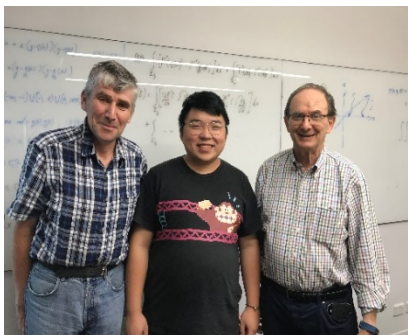
VISITORS TO CARM



Distinguished Professor Noel Cressie, University of Wollongong visited CARM as the SMP invited colloquium speaker and presented his talk titled, "Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification", at the Maths Colloquium on Monday 18th November, 2019.



Dr John Norbury, emeritus member of Mathematical Institute, University of Oxford joined Roger Cropp from 24/2/2020 to 28/2/2020, in our new UQ, School of Mathematical offices and enjoyed the availability of writing surfaces to explore their research.



Associate Professor Vladimir Ejov flew to Brisbane from Flinders University, Adelaide, Australia to work with PhD student Zhihao Qiao and Professor Jerzy Filar on the ARC Discovery Grant, "*Time consistency, risk-mitigation and partially observable system*". Vlad visited Brisbane from 8/3/2020 – 14/3/2020.

NEW PROJECTS

The FRDC project titled, "Modelling environmental changes and effects on wild-caught species in Queensland" was a successful application and is now up and running. This is a joint project with **Jerzy Filar**, Tony Courtney, Susannah Leahy, Julie Robins, **Wen-Hsi Yang**, Nan Ye, Barbara Robson, Matthew Campbell and Craig Steinberg.

The 2020-2022 \$365,000 ARC Discovery grant titled, "Partially observable MDP's, Monte Carlo methods, and sustainable fisheries" with Chief Investigators Kroese, D., **Filar, J.**, Ye, N., Kurniawati, H., Bohner, M. research is now underway.

The 2020 FRDC Recreational Fishing Project will develop methods to estimate annual Queensland recreational harvest from existing Fisheries Queensland data in years when no statewide recreational surveys are conducted. The team consists of Jerzy Filar, , Matt Holden, Manuela Mendiolar from CARM; Sue Helmke, Malcolm Pearce James Webley, Tyson Martin and Michael O'Neill or George Leigh all from Fisheries Queensland.



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FEBRUARY 2020 R WORKSHOPS

Thanks again to Anthony Richardson, Chris Brown and Dave Schoeman for conducting the R Workshops from 11-14 February 2020. A special thank you to Bill Venables for conducting the Advanced R Workshop over 3 days and on his 76th birthday. We thank St Leo's again for providing healthy and sustainable catering for the morning and afternoon teas for the dedicated workshopppers.

The 2021 workshops will run again in February at the St Lucia campus. Watch the CARM events page <https://smp.uq.edu.au/research/centres/carm/events> for dates and registration.



Anthony Richardson facilitating the Intermediate R Workshop



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Some of the Advanced R Workshop participants enjoying a discussion at the conclusion of the workshop.



St Leo's Catering, Vasili Exarhos and Chris Gill



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PUBLICATIONS 2020

JOURNALS

1. Adams, M.P., Sisson, S.A., Helmstedt, K.J., Baker, C.M., **Holden, M.H.**, Plein, M., Holloway, J., Mengersen, K.L., McDonald-Madden, E. (2020). Informing management decisions for ecological networks, using dynamic models calibrated to noisy time-series data, [Ecology Letters](#), doi: 10.1111/ele.13465
2. **Armstrong, A.J., Armstrong, A.O.**, Bennett, M.B., McGregor, F., Abrantes, K.G., Barnett, A., **Richardson, A.J.**, Townsend, K.A., Dudgeon, C.L. (2020). The geographic distribution of reef and oceanic manta rays (*Mobula alfredi* and *Mobula birostris*) in Australian coastal waters, [Journal of Fish Biology](#): 1-6
3. **Filar, J.A., Qiao, Z., Streipert, S.** (2020). Risk sensitivity in Beverton-Holt fishery with multiplicative harvest, [Natural Resource Modelling](#): e12257
4. O'Bryan, C., Allan, J., **Holden, M.**, Sanderson, C., Venter, O., Di Marco, M., McDonald-Madden, E., Watson, J. (2020). Intense human pressure is widespread across terrestrial vertebrate ranges, [Global Ecology and Conservation](#) 21: e00882

CONFERENCE PAPER

5. **Filar, J.A., Qiao, Z., Ye, N.** (2019). POMDPs for sustainable fishery management, 23rd International Congress on Modelling and Simulation, Canberra, ACT, Australia, 1 to 6 December 2019, mssanz.org.au/modsim2019

TECHNICAL REPORTS WITH INDUSTRY PARTNERS

6. O'Neill, M. F. Lovett, R, Bessell-Browne, P., Streipert, S., Leigh, G., Campbell, A. Northrop, A., Wortmann, J., Helidoniotis, F., **Yang, W-H., Holden, M.**, and French, S. (2020). Custom training and technical support for the fishery stock assessment software 'stock synthesis' , FRDC Project No. 2018-168, Fisheries Research and Development Corporation