

Twitter Conference 2018



Abstracts

#CEEDTC2018

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Organising committee

Dr Hannah Fraser (CEED Alumni, The University of Melbourne)

Dr Kathy Avent (CEED Chief Operations Officer)

Ms Rachel Friedman (CEED PhD student, The University of Queensland)

Ms Stephanie Avery-Gomm (CEED PhD student, The University of Queensland)

Mr Casey Fung (CEED Senior Communications Manager, The University of Queensland)

About the ARC Centre of Excellence for Environmental Decisions

CEED is an Australian Research Council (ARC) partnership between Australian and international universities and research organisations. Our vision is to be the world's leading research centre for solving environmental management problems and for evaluating the outcomes of environmental actions. We will benefit environmental science, policy and management across Australia and around the world by solving complex problems of environmental management and monitoring in a rapidly changing and uncertain world.

About #CEEDTC2018

On 22 May 2018, aligned with World Biodiversity Day, CEED hosted the inaugural online Twitter Conference (#CEEDTC2018) with a focus on Environmental Decisions.

Objectives: social and environmental

The primary objectives were to strengthen our inter-node network using new technical platforms, keeping abreast of research developments and impact, and identifying new opportunities for inter-node collaboration. In addition, #CEEDTC2018 may provide additional outreach and engagement to a broader lay person audience and highlight CEED's international standing.

Hosting a Twitter conference makes sense for several reasons. Firstly, although Twitter Conferences cannot replace the valuable interactions of traditional format conferences, they may be a cost-effective solution when funds are limited. Secondly, travel is not necessary. This provides equitable participation for people who may not have funds to travel, who may be in the field, or who may have personal commitments that preclude them from attending a face-to-face CEED conference. Thirdly, a large proportion of CEED research relates to the environmental impacts of climate change. Carbon emissions from conference travel contribute to the very environmental issues many CEED researchers are dedicated to addressing.

Presentations

The organising committee accepted the abstracts of 57 presenters from the CEED community. Presentations ran from 7:00 am to 7:09 pm AEST, with scheduled breaks and time for questions and discussions.

Participation and engagement

Engagement exceeded expectations for our first Twitter conference. By mid-conference, #CEEDTC2018 was the #1 trending Twitter hashtag in Australia. There were over 200 participants and a potential reach of almost 600,000 people.

We saw participation that extended from CEED nodes to the wider scientific community, and the conference reached all over the world.

We're also very proud that the latest in environmental decision science was freely accessible to all, and that our online conference didn't generate travel emissions!

Keynote speakers



Prof Kerrie Wilson, Director ARC Centre of Excellence for Environmental Decisions, UQ.
Breaking the stalemate in the triage debate - what is the role of ethics?



Prof Michael McCarthy, Deputy Director ARC Centre of Excellence for Environmental Decisions, UM.

Pyrodiversity and biodiversity: Simple models but complex relationships.



Prof Hugh Possingham, Chief Scientist, The Nature Conservancy, USA & CEED Partner Investigator.

Spatial Action Mapping.



Prof Yvonne Buckley, Chair of Zoology, Trinity College Dublin & CEED Partner Investigator.

Climate suitability affects plant population persistence



Prof David Pannell, Director, Centre for Environmental Economics and Policy, UWA & CEED Chief Investigator.

Measuring the benefits of environmental research.



Prof Sarah Bekessy, RMIT Centre for Urban Research & CEED Chief Investigator.

Grappling with the social dimension of novel ecosystems.



Prof Brendan Wintle, Director National Environment Science Program Threatened Species Recovery Hub & CEED Chief Investigator.

Five things we must do to halt the 6th mass extinction.

Presentations

7:00 — 8:50

1. Spatial Action Mapping

Hugh Possingham, The Nature Conservancy @HugePossum

Conservation ecologists and geographers obsessively map measures of biodiversity assets and occasionally the threats to those assets. But people can't do places or threats, they can only do actions. Here we show examples of how to map actions not assets.

2. Participation in planning and social networks increase social monitoring in community-based conservation

Steven Alexander, University of Waterloo @salexander_11

Data was collected using questionnaires (n = 277). Results suggest local fishers are more likely to report illegal fishing if they had participated in conservation planning and if they are directly linked to community-based wardens in information sharing networks.

3. Decomposition of wetland plants: a non-linear hierarchical Bayesian approach

Saras Windecker, The University of Melbourne @smwindecker

Freshwater wetlands are very effective at storing carbon, primarily due to plant CO₂ uptake during photosynthesis and deposition as litter. Attributes of plant species, termed 'traits', can be used to generalise species' contribution to soil carbon. In this study, we set up a decomposition experiment of 29 wetland plants to explore the predictive capacity of traits on litter decomposition. We combined traditional traits associated with the trade-off between resource allocation to photosynthetic and structure tissue with biomass traits related to leaf carbon complexity. Compared to typical negative exponential or log-linear models for decay, using the nonlinear Weibull model allowed us to examine the effect of traits on both the shape as well as scale of decay over time. Model comparison identified that models containing biomass traits better predicted decay rate than those with leaf traits.

4. Future recovery of baleen whales is imperiled by climate change

Vivitskaia Tulloch, The University of Queensland, CSIRO @vivotulloch

Historical harvesting pushed many whale species to the brink of extinction. Although most large whales are recovering slowly, it is not known how climate change may help or hinder that recovery, particularly for species that forage in rapidly warming regions such as the Southern Ocean. Reliable population estimates and plausible future predicted trajectories for baleen whales and their prey are key requirements for ecosystem-based management and conservation. We use models coupling whale dynamics to their prey and climate to investigate how projected changes in ocean temperature, sea ice and primary productivity may impact future populations of five baleen whale species across the Southern Hemisphere. We predict some baleen whale recovery trends may be reversed by climate change. Despite initial recovery from historical whaling, our models predict concerning declines, even local extinction by 2100, for Pacific populations of blue, fin and southern right whales, and Atlantic/Indian fin and humpback whales. Impacts vary spatially and temporally, with populations in the Atlantic/Indian oceans may not be as severely affected by climate change. Forecasted whale declines were a consequence of declining copepod and krill food at low latitudes due to climate change and increasing competition for prey. These findings highlight the critical role of climate change on the recovery of whales and inter-dependences in the recovery of species that feed on the same prey base. Our study highlights the need for action now to reduce emissions and avoid longer term irreversible declines in baleen whales and important krill resources due to climate change.

5. How just and just how?

Rachel Friedman, The University of Queensland @YumMusings

Conservation not only involves wildlife and habitat, but also people's lives and interests. This raises the issue of how we are defining and assessing social equity in conservation. We reviewed the literature on the topic to get an answer!

6. 50 shades of private landholders: Exploring factors that are associated with conservation covenant ownership

Carla Archibald, The University of Queensland, Imperial College London @CarlaWildlife

Privately owned land is a battlefield for conservation. #Nature is plentiful, however, so too is the growing pressure from competing land-uses. I #research the social and environmental factors that compel people to conserve their land in different parts of #Australia and under different #conservation programs #CEEDTC2018

7. Punching above their weight: the ecological and social benefits of pop-up parks

Luis Mata, RMIT @matanature

Current enthusiasm for urban greening is unprecedented. Evidence is mounting for the socio-ecological benefits of large, permanent greenspaces, but the potential for pop-up parks (PUPs) – small, temporary greenspaces – to synergistically enrich urban nature for the benefit of biodiversity and people is unknown. We highlight the potential of PUPs to provide habitat and resources for biodiversity, deliver ecosystem services and strengthen habitat connectivity. Drawing on a case study from Melbourne, Australia, we provide evidence of the biodiversity benefits of PUP. Furthermore, we review the evidence linking greenspace design with social outcomes to demonstrate how PUPs may deliver social interaction and mental restoration benefits. Finally, we highlight how PUPs can function as 'socio-ecological laboratories' for conducting experiments that inform urban design. We propose a research agenda to address the pressing need to understand how small, temporary greenspaces may be optimally designed to provide socio-ecological benefits where people live, work and play.

8. Using environmental DNA metabarcoding to sample freshwater fish communities

Emily McColl-Gausden, The University of Melbourne @EcoEmcg

We use hierarchical species occupancy-detection models to compare the sensitivity of eDNA metabarcoding vs electrofishing for monitoring freshwater fish communities. We also examine whether key choices associated with eDNA metabarcoding impact the perceived sensitivity of metabarcoding relative to electrofishing.

9. Trait-based early warning signals of collapse in an age-structured population under future climatic change

Christopher Clements, The University of Melbourne @CClements88

We used integral projection models to project the trait and population dynamics of @SoaySheep in the face of predicted climatic change and show that population crashes are predicted by shifts in the mean and standard deviation of body size in susceptible age classes.

10. One third of global protected land under intense human pressure

Kendall Jones, The University of Queensland @JendallKones

Human activity within protected areas can reduce their conservation effectiveness. We show one third of protected land is under intense human pressure, and 55% of PAs have seen pressure increases since the 1990s. Transparent reporting on human pressure within protected areas is now critical for global conservation targets.

9:00 — 11:00

11. Breaking the stalemate in the triage debate - what is the role of ethics?

Kerrie Wilson, The University of Queensland @kerrie_a_wilson

I'll outline the ethical dimensions of conservation triage related to stakeholder diversity, objectives and actions, institutions and uncertainties. I hope to foster open dialog and constructive debate about the role of conservation triage.

12. Reducing risk in reserve selection using Modern Portfolio Theory: coastal planning under sea-level rise

Rebecca Runting, The University of Queensland @RKRunting

Accounting for uncertainty in spatial conservation plans is essential to improve their long-term effectiveness. Diversifying site selection through portfolio theory can ensure conservation outcomes by reducing the risk of failure across future climate change scenarios.

13. Putting pyrodiversity to work for animal conservation

Luke Kelly, The University of Melbourne @luketkelly

An influential concept in fire ecology and management is that “pyrodiversity promotes biodiversity”. In this presentation, I show how my recent work is helping fire managers define and achieve desirable forms of pyrodiversity that support biodiversity conservation in a rapidly changing world.

14. Challenges in urban animal ecology: A focus on connectivity

Holly Kirk, RMIT @HollyKirk

Urban environments are highly fragmented, with patches of animal habitat separated by a range of land-uses. A key issue for urban conservation is reducing the impact of fragmentation on animal populations. This often leads to measures of connectivity, & how this can be improved.

15. Shining new light on global #seabird population trends

Stephanie Avery-Gomm, The University of Queensland @saverygo

The migratory nature of many seabirds necessitates that conservation occurs at an international scale, but efforts are often hindered by fragmented trend info based on country- or global-level assessments. Here we introduce a new global effort to collate data on monitored breeding populations and visualize how seabird populations have changed over the past 65 years.

16. Does rapid protected area expansion impact the ecological representation of reserve networks?

Caitlin D. Kuempel, The University of Queensland @cdkuempel

Area-based targets have spurred the rapid expansion of global protected area networks, but international agreements (i.e. Aichi Target 11) also have other goals like achieving representation. We evaluate the impact that rapid protected area expansion on ecological representation using the Protection Equality metric.

17. Marine restoration for climate change mitigation and adaptation: accounting for blue carbon and ecosystem services

Phoebe Stewart-Sinclair, The University of Queensland @phoebestewsin

Marine restoration is seen as net-cost, especially for ecosystems that are expensive to restore e.g. coral. However, the benefits of investing in marine restoration can outweigh costs. Benefits to the private/public sector may include climate change mitigation by blue carbon.

18. When is social equity is the enemy to conservation prioritisation?

Carissa Klein, The University of Queensland [@carissajoyklein](#)

Although social equity is often required to achieve conservation outcomes, over emphasis can critically undermine the achievement of conservation goals. We develop a decision tree to help managers determine when the equitable distribution of costs and benefits in plans is likely to compromise conservation outcomes.

19. Planning and building better cities with Biodiversity Sensitive Urban Design

Georgia Garrard, RMIT [@GeorgiaGarrard](#)

Urbanisation drives biodiversity loss. Yet the impacts of urbanization can be mitigated by sensitive urban design. BSUD aims to create urban environments that contribute positively to biodiversity by incorporating ecological knowledge into urban planning and design decisions.

20. Pyrodiversity and biodiversity: Simple models but complex relationships

Michael McCarthy, The University of Melbourne [@mickresearch](#)

I use simple models to show that the relationship between diversity of fire regimes in a landscape, and the diversity of species that the landscape supports can be highly varied. Positive, negative and zero correlations should be expected in different circumstances.

11:10 — 12:50

21. Marine Spatial Planning in a transboundary context

Nur Arafeh Dalmau, The University of Queensland [@ADalmauNur](#)

Priority areas for conservation were identified in Baja California, MEX, for a future link with California's, US, network of MPAs. This work is part of an ongoing effort to manage shared resources. Future initiatives, involving multiple actors, will establish a connected transboundary network of MPAs.

22. Joining the dots versus growing the blobs: Optimal targeting of ecological restoration

Maksym Polyakov, The University of Western Australia [@MaksymPolyakov](#)

We use simulation to compare spatial targeting strategies of ecological restoration on private land. With small budget and in cleared landscapes, aggregation outperforms connectivity. In less cleared landscapes and with greater budget, connectivity performs best.

23. Managing catchments to conserve coastal ecosystems

Chris Brown, The University of Queensland [@blueecology](#)

Coastal ecosystems are threatened by runoff of pollution on land. We worked with partners in the Pacific to identify where protection of forests can help conserve coral reefs and their dependent fisheries.

24. Insights revealed by the value of information in a multiple-objective decision: Brown trout in the Grand Canyon

Michael C. Runge, US Geological Society [@mcr_evpi](#)

Brown trout have expanded their range in the Colorado River ecosystem, possibly threatening a delicate balance among multiple objectives. An EVPI analysis reveals there is important uncertainty impeding any response. There are also new challenges for expert judgment.

25. Spatial and temporal patterns of land clearing during policy change

Blake Alexander Simmons, The University of Queensland @BAlexSimmons

On the heels of fiery Parliamentary debate around #landclearing laws in #Qld, we show that landholders in different regions across the state have responded differently to #policy changes over time. #Regulation should not take a 'one size fits all' approach. #qldpol #deforestation

26. Achieving ecoregion representation within Protected Areas: A simple but effective prioritisation approach

Alienor Chauvenet, The University of Queensland @AChauvenet

I present a method for prioritising ecoregions for protection to meet international biodiversity targets. It is a simple and strategic acquisition plan that delivers increase in ecoregions adequately protected by 2030 from 9% to >35 % under current funding constraints.

27. Seasonal weather forecasting in restoration can improve success and reduce uncertainty in decision making

Valerie Hagger, The University of Queensland @valerie_hagger

Using restoration case studies across Australia, we found that seasonal forecasting can detect unfavourable weather with sufficient skill and lead time to be useful for restoration projects. We show how integrating seasonal forecasting into decision making during restoration planning is expected to improve success.

28. Good fisherman, bad fisherman: Understanding variations among individual operators to improve environmental performance of fisheries

Leslie Roberson, The University of Queensland @leslieamlwch

Threatened species bycatch is usually managed at the fleet-level, such as bycatch quotas, which overlooks variable skill and behavior among fisheries operators. If bycatch is really a problem at the individual vessel level, not across the whole fishery, that opens up more efficient and equitable solutions for managers

29. Fate of populations under harvest

Matthew Holden, The University of Queensland @MattHHolden

Large populations can be driven extinct by rarity value. We describe new types of population dynamics under Anthropogenic Allee Effect models.

13:30 — 15:00

30. Five things we must do to halt the 6th mass extinction

Brendan Wintle, The University of Melbourne @BrenWintle

31. Questionable research practices in ecology and evolution

Hannah Fraser, The University of Melbourne @HannahSFraser

Psychology research has identified Questionable Research Practices which increase the chance that results are statistical artifacts rather than representing true relationships. Many of these practices are part of standard research practice in ecology and evolution.

32. The different dimensions of disturbance theory, and how it can reduce antibiotic resistance

Christopher Baker, The University of Queensland @cbaker_research

Ecological disturbances have an important role in shaping ecosystems. This is a complex relationship, and it is critical to understand how different aspects of disturbance combine to affect a system. Disturbance theory isn't confined to ecosystems, and this theory can help us manage antibiotic resistance.

33. Reallocating budgets among conservation projects in a changing world: when and how is it worthwhile?

Chung-Huey Wu, The University of Melbourne @ChungHueyWu

After governments commit money to conservation projects, new problems may emerge and existing ones may evolve. Should we consider reallocating budget? Controlling weed invasion may benefit from reallocation, but IUCN-status-based bird conservation may not due to assessment costs.

34. Using pollination services for spatial conservation prioritization in agricultural landscapes

Sofia Lopez-Cubillos, The University of Queensland @SofiaLop11

The main objective is to understand the synergies and trade-offs between forest that provide pollination services and biodiversity conservation.

35. Associations between urban bird traits and environmental variables vary across scales

Andres Felipe Suarez Castro, The University of Queensland @fsuarezca

Conserving biodiversity at the local scale may be ineffective if landscape scale attributes are ignored. Without accounting for effects of landscape fragmentation, local actions such as green gardening may favour species that already dominate in urban areas

36. Grappling with the social dimension of novel ecosystems

Sarah Bekessy, RMIT @sbekessy

Debate about novel ecosystems is split between those who embrace its flexibility and those who see it as a slippery slope towards poor ecological standards. The way forward is to frame novelty in a decision context and to evaluate its capacity to meet socio-ecological objectives.

15:10 — 17:30

37. Mine closure planning in Western Australia

Marit Kragt, The University of Western Australia @maritkragt

This work in progress is related to my ARC DECRA research on preferences for mine site rehabilitation. I will discuss how completion criteria for mine closure are currently developed in Western Australia.

38. How many rats does it take to make a cat?

Michaela Plein, The University of Queensland @michaelaplein

Feral cats & black rats threaten Christmas Island's iconic wildlife & cat eradication is underway. To help support ongoing management & avoid unwanted consequences on a seabird, we model a 3-species system to identify if cat control releases rats and how to monitor for this.

39. The Sumatran ‘big four’: How well do they represent priority areas for taxonomic, phylogenetic and functional diversity?

Marsya Sibarani, The University of Queensland [@marsyachr](#)

We assessed the spatial overlap between priority areas for mammal conservation in Sumatra and the ranges of four surrogate species. We found that Sumatran tiger covered the highest proportion of the top priority areas. Protecting only the big four is useful, but insufficient for conserving broader biodiversity.

40. Making a case for investing in marine habitat restoration

Abbie Rogers, The University of Western Australia [@abbierogers84](#)

Prioritising investment in restoration projects is increasingly important given the state of global habitat loss. Using a benefit-cost analysis we will weigh up the tangible and intangible costs and benefits of a shellfish reef restoration project in South Australia.

41. New Global Map of Accessibility

Bonnie Mappin, The University of Queensland [@BonMappin](#)

“Roads and other transportation infrastructure provide people access to health, education and economic opportunities, but can also cause habitat fragmentation, and open up areas to degradation and deforestation.

This research provides useful tool to support sustainable development and conservation planning.”

42. A generalizable integrated natural capital methodology for targeting investment in saltmarsh enhancement

Katrina Davis, The University of Queensland [@NRMecon](#)

#Saltmarsh produce a range of #ecosystemservices but are degraded and disappearing globally. We identify priority areas for saltmarsh #realignment in the UK based on opportunity costs and potential environmental benefits.

43. Land clearing regulation fails to protect threatened forests

Jonathan Rhodes, The University of Queensland [@j_r_rhodes](#)

Evaluation of existing regulatory settings is critical for developing effective strategies to arrest forest loss. Despite the introduction of regulation to reduce land clearing in Queensland, Australia, we show that threatened forests continue to be cleared at rates nearly three times those of less threatened forests.

44. Measuring the benefits of environmental research

David Pannell, The University of Western Australia [@dpannell66](#)

Environmental scientists are asked to justify their work in terms of benefits. How can we measure benefits? It is difficult, even for research with large impacts. There is a long and potentially fragile chain between environmental research and policy impact.

45. Planning for population persistence in the face of ecological traps

Keren Raiter, The Hebrew University of Jerusalem [@kerenraiter](#)

We’re using emerging information on species distribution, dispersal & genetic variation combined with insights into varying effects of different land management- incl. ecological traps, to provide cross-tenure decision support for ensuring endangered lizard persistence.

46. Lessons learnt from conceptual landscape models: Reptile and frog populations in a woodland ecosystem

Stephanie Pulsford, Australian National University [@StephPulsford](#)

We analysed the relevance of a range of conceptual landscape models for empirical data on reptile and frog populations in a woodland agricultural system. We found binary patch-matrix concepts were not relevant and no single model fully captured the range of species responses.

47. Protection of the Ethiopian wolf: What are tourists willing to pay for?

Tafesse Estifanos, The University of Western Australia [@TafesseEstifan1](#)

Using choice experiment, we examined tourists willingness to pay (WTP) for protection of the Ethiopian wolf in a park. A mixed logit model revealed tourists' WTP US\$ 5.82 for enhancement of the population from 200 to 250 wolves. Prior visit experience to Ethiopian parks and viewing other unique species influence WTP beyond this level.

48. REDD+ adoption and factors affecting respondents' knowledge of REDD+ goal: Empirical evidence from REDD+ piloting sites

Ram Pandit, The University of Western Australia [@Ram2Pandit](#)

Controlling for respondent and community forest-related characteristics in two REDD+ piloting sites in Nepal, analysis of post-piloting survey suggests that respondent's age, household economy and the forest product contribution from own land affect their knowledge of REDD+ goal.

49. Does communicating ecosystem services build community support for coastal management? Findings from an experimental study

Angela J Dean, The University of Queensland [@AngelaSocSci](#)

Which approaches to communicating the benefits of coastal management are most effective? Our findings did not demonstrate a consistent advantage in communicating social benefits, compared to environmental messages. In contrast to expectations, messages using factual language were more effective than moral messages. Overall, when considering all messages compared to control, beneficial effects were only observed in political progressives, highlighting the importance of examining message content and language.

17.40 – 19:10

50. Fire management's influence on plant traits

Annabel Smith, Trinity College Dublin [@smithecology](#)

Fire is natural, but climate change and fire management influence fire regimes. I will show how grassland fire management influences vegetative and reproductive growth in an invasive plant. This biological data will inform fire management decisions for conserving biodiversity and managing invasive species.

51. What does biodiversity mean to business?

Prue Addison, University of Oxford [@prueaddison](#)

Businesses are beginning to account for and report on biodiversity in corporate sustainability reports. I evaluate how robust these initiatives are, and explain how conservation science can help advance the emerging field of corporate biodiversity accountability.

52. Co-development of agri-environmental schemes post Brexit

Kate Hind, University of Exeter [@HelloHindy](#)

Delivering enviro benefits on farms is a major global challenge. We co-develop optimal #agrienvironmental schemes with farmers to deliver #NaturalCapital post #Brexit. Data on farm typology and resilience helps identify how to support farmers to deliver public enviro goods.

53. Introduced species that overcome life history tradeoffs can cause native extinctions

Jane Catford, The University of Melbourne, Australian National University [@JaneCatford](#)

Introduced species threaten native biodiversity, but whether exotic species can competitively displace natives remains contested. Using evidence from metacommunity models, we show how human-mediated species introductions could generate extinction debts, especially when combined with other forms of global change.

54. Urban Resilience Organiser

Carl Emerson-Dam, Climate Change Centre Reading (NGO) [@CCCRdg](#)

DISASTER ADAPTATION- Climate Action CO2lutions to Sustainable Cities and Communities in partnership “Making Cities Resilient” to achieve the goals. Well-designed urban growth, in e.g. urban regeneration and disaster risk management adaption with Urban Climatic Emergency Evacuation Planning is a way forward

55. The connections between theory and practice in spatial conservation prioritisation

Samuel Sinclair, Imperial College London, University of Oxford [@samuelpsinclair](#)

A huge challenge facing the modern world is how to use science to effectively inform and support complex decision making. In these tweets, I'll show that conservation planning is achieving exactly this through collaborations between academics and practitioners.

56. When conservation goes viral: The diffusion of innovative biodiversity conservation policies and practices

Morena Mills, The University of Queensland [@morenamills](#)

The factors that shape rates and patterns of conservation interventions remain unclear, puzzling scientists & hindering the development of evidence-based policy. Diffusion of innovation theory provides a novel lens for examining rates and patterns in the establishment of conservation interventions.

57. Climate suitability affects plant population persistence

Yvonne Buckley, Trinity College Dublin [@y_buckley](#)

Population extinction and persistence are limited by climate suitability through effects of climate on underlying vital rates and their variation. Climate effects on growth, survival and reproduction integrate to impact on population growth rate and response to perturbation.

Collaborating organisations



Partner organisations



ARC Centre of Excellence for Environmental Decisions

Room 532, Goddard Building 8
The University of Queensland
St Lucia, QLD 4072, Australia
P (+61 7) 3365 6907
F (+61 7) 3365 1692

ceed.edu.au