

## Curriculum Vitae

Dr Catherine M Dichmont

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**Present Position Title:** Senior principal Population modeller, CSIRO Marine and Atmospheric Research and Stream Leader: Resource Use and Conservation

### Background

Dr Cathy Dichmont is a Senior Principal Research Scientist in CSIRO. Cathy was born in South Africa and completed her BSc and BSc Honours at the University of Cape Town. She later completed her MSc at the same institution. In 2006 she was awarded her PhD from the School of Mathematics and Physics at the University of Tasmania.

Upon completion of her BSc, she remained at the University of Cape Town, working as a Research Assistant on river regulation and inter-basin transfer schemes. She later moved to the Sea Fisheries Research Institute (SFRI), working firstly as an oceanographer, then as a principal oceanographer.

She moved to Australia in 1996 to begin work at the Southern Fisheries Centre, Queensland Department of Primary Industries at Deception Bay and joined CSIRO in 1999 as a natural resource modeller. By 2011 she had been promoted to Senior Principal Research Scientist and Stream Leader of the Resource Use and Conservation Stream at CSIRO Marine and Atmospheric Research. As Stream leader within CSIRO, she co-ordinates a large fisheries research portfolio.

Cathy has a national and international reputation in stock assessment, modeling natural systems, natural resource management, shared fisheries stocks, and management strategy evaluation (MSE) and has been Principal Investigator in numerous collaborative and multi-disciplinary projects over her career. She has over 20 years of experience in temperate and tropical marine ecosystems at international and regional levels. She was a key contributor to the bio-economic model that aided the development of the Prawn fishing industry in the Gulf of Carpentaria for which she and her team received the CSIRO medal for Research Achievement. She has published over 40 peer reviewed journal papers and >80 reports.

### Qualifications

1986	B.Sc. (Zoology and Botany), University of Cape Town, South Africa,
1987	B.Sc. Honours (Zoology theses in Freshwater Biol.), UCT, South Africa,
1991	M.Sc. (Quantitative Resource Ecology: Maths and Zoology Dept.), UCT, South Africa.
2006	PhD (Mathematics and Physics), University of Tasmania.

### Work history

2009-	Stream Leader (Resource Use and Conservation), CMAR
2010-	Senior Principle Research Scientist, CMAR
2006-09	Stream leader (Northern Fisheries and Ecosystems), CMAR
2001-10	Senior Research Scientist, CMAR
1999-05	Leadership team of Northern Fisheries and Ecosystems Stream; CSIRO Marine Research, Cleveland, Australia;
1999-01	Research Scientist: CSIRO: Natural resource modeller (1999-present)
1996-99	Sub-program leader: Stock Assessment and Monitoring: Southern Fisheries Center, QDPI, Deception Bay, Australia
1992-96	Principal oceanographer: SFRI: Resource Assessment and Modelling, South Africa
1991	Oceanographer: Sea Fisheries Research Institute (SFRI): Ecosystems section, South Africa
1988-89	Research Assistant. Research Assistant on river regulation and inter-basin transfer schemes, University of Cape Town, South Africa

### Scholarships and Academic Awards

2009	CSIRO Medal for Research Achievement
2007	Finalist: Queensland Smart State Women: Public Service Science category
1999	Queensland Seafood Industry Best Research Project Award
1987-91	University of Cape Town Postgraduate Bursary

### Associations

Natural Resource Modelling Association

### **Committee Positions and Major Steering Committees**

1. Member of Gladstone Healthy Harbour Partnership (GHHP) Science Panel (SP) (2013-)
2. Scientific Advisory Board of EU project MYFISH - Maximising yield of fisheries while balancing ecosystem, economic and social concerns (PI – Anna Rhindorf, Denmark)
3. Steering committee of SISAM organising The World Conference on Stock Assessment Methods for Sustainable Fisheries, Boston, USA, 16-18th July 2013.
4. Steering Committee of FisheriesWiki - an eNGO driven Wiki
5. Member of Northern Fisheries Research Hub representing tropical fisheries CSIRO research (2012-present)
6. Research member to South Australia Rock Lobster Management Advisory Committee (2012-present) and Chair of SA TLMAC research sub-committee (2012-present).
7. Member of the Healthy Waterways Ltd. Decision Support Scientific Expert Panel (2011-present)
8. Chair of the Tropical Tuna Resource Assessment Group (2010-present)
9. Research member of NORMAC (2006-2011) and chair of research sub-committee (2006-2011)
10. Member of the Northern Prawn Fisheries Assessment Group (2008-2011)
11. Member of Queensland trawl Stock Assessment Group (2009-2010) and Technical Advisory Group (2009-2010)
12. Chair of the Northern Prawn Fisheries Assessment Group (1999-2006)
13. Advisor to NORMAC Research Member (Ian Poiner) (1999-2005)
14. Member of Spanner Crab Stock Assessment Group
15. Member of Queensland Trawl Stock Assessment Group and member of 5 MAC-similar groups over work career
16. Theme minder for Sustainable Fisheries theme and member of the high level Strategic Directions Team within CSIRO Marine Research (2004-present)

### **Key assessment species**

Prawns, shark, crab, scallop, abalone, sole, horse mackerel, whiting, snapper, cormorants, pilchard, lobster, coastal zone management

### **Countries undertaken or reviewed assessments**

South Africa, Australia, Indonesia, Papua New Guinea, USA, Europe

### **Programming languages**

ad model builder, R, Fortran, SAS, C++

### **Journal publications since 2010**

1. Ceccarelli, D.M., McKinnon, D.A., Andréfouët, S., Allain, V., Young, J., Gledhill, D., Flynn, A., Bax, N., Beaman, R., Borsa, P., Brinkman, R., Bustamante, R., Campbell, R., Cappo, M., Cravatte, S., D'Agata, S., **Dichmont, C.M.**, Dunstan, P.K., Dupouy, C., Edgar, G., Farman, R., Furnas, M., Garrigue, C., Hutton, T., Kulbicki, M., Letourneur, Y., Lindsay, D., Menkes, C., Mouillot, D., Parravicini, V., Payri, C., Pelletier, B., de Forges, B.R., Ridgway, K., Rodier, M., Samadi, S., Schoeman, D., Skewes, T., Swearer, S., Vigliola, L., Wantiez, L., Williams, A., Williams, A., Richardson, A., in press. The Coral Sea: Physical Environment, Ecosystem Status and Biodiversity Assets. Book Series: Advances in Marine Biology, 66. Chapter: 4. ISSN 0065-2881. <http://dx.doi.org/10.1016/B978-0-12-408096-6.00004-3>. 211-287.
2. Ovenden, J.R., Berry, O., Welch, D.J., Buckworth, R.C., **Dichmont, C.M.** accepted. Ocean's eleven: a critical evaluation of the role of population, evolutionary and molecular genetics in the management of wild fisheries. *Fish and Fisheries*.
3. **Dichmont, C.M.**, Ellis, N., Bustamante, R., Deng, A.R., Tickle, S., Pascual, R., Lozano-Montes, H., Griffiths, S. 2013. On evaluating marine spatial closures with multiple conflicting objectives. *Journal of Applied Ecology*. 50(4): 1060-1070. doi: 10.1111/1365-2664.12110.
4. Dowling, N., **Dichmont, C.M.**, Smith, A., Smith, D.S. 2013. Is it possible to quantify the risk-cost-catch frontier for fisheries managers? *Marine Policy*. *Marine Policy* 40: 41–52. DOI <http://dx.doi.org/10.1016/j.marpol.2012.12.009>.
5. **Dichmont, C.M.**, Pascoe, S., Jebreen, E., Pears, R., Brooks, K., Perez, P. 2013. Choosing a fishery's governance structure using data poor methods. *Marine Policy*. 37: 123–131. DOI 10.1016/j.marpol.2012.02.018.
6. Pascoe, S., **Dichmont, C.M.**, Brooks, K., Pears, R., Jebreen, E. 2013. Management objectives of Queensland trawl fisheries: putting the horse before the cart. *Marine Policy*. 37: 115–122. DOI 10.1016/j.marpol.2012.02.016.

7. **Dichmont, C.M.**, Deng, R.A., Punt, A.E., Venables, W.N., Hutton, T. 2012. From input to output controls in a short-lived species: the case of the Northern Prawn Fishery. *Marine and Freshwater Research*. 63: 727–739. <http://dx.doi.org/10.1071/MF12068>.
8. Young, J.W., McKinnon, D.A., Brinkman, R., Bustamante, R., Cappo, M., Ceccarelli, D., **Dichmont, C.M.**, Doherty, P., Furnas, M., Gledhill, D., Griffiths, S., Hutton, T., Ridgway, K., Smith, D.M., Skewes, T., Williams, T., Richardson, A.J. 2012. Workshop on the ecosystem and fisheries of the Coral Sea: an Australian perspective on research and management. *Reviews in Fish Biology and Fisheries*. DOI 10.1007/s11160-011-9251-5.
9. Pascoe, S., Coglan, L., Punt, A.E., **Dichmont, C.M.** 2011. Impacts of vessel capacity reduction programs on efficiency in fisheries: the case of Australia's multispecies northern prawn fishery. *Journal of Agricultural Economics*. doi: 10.1111/j.1477-9552.2011.00333.x.
10. Plagányi, E., Bell, J., Bustamante, R., Dambacher, J.M. Dennis, D., **Dichmont, C.M.**, Dutra, L.X.C., Fulton, E., Hobday, A., van Putten, I., Smith, F., Smith, T., Zhou, S. 2011. Modelling climate-change effects on Australian and Pacific aquatic ecosystems: a review of analytical tools and management implications. *Marine and Freshwater Research*. *Marine and Freshwater Research*. 62: 1132-1147.
11. Punt, A.E., Deng, R.A., Pascoe, S., **Dichmont, C.M.**, Zhou, S., Plagányi, É.E., Hutton, T., Venables, W.N., Kenyon, R., van der Velde, T. 2011. Calculating optimal effort and catch trajectories for multiple species modelled using a mix of size-structured, delay-difference and biomass dynamics models. *Fisheries Research*. 109:201-211.
12. Pascoe, S., Vieira, S., **Dichmont, C.M.**, Punt, A.E., 2011. Optimal vessel size and output in the Australian northern prawn fishery: a restricted profit function approach. *Australian Journal of Agricultural and Resource Economics*. 55:107-125.
13. Pascoe, S, Punt, A., **Dichmont, C.M.**, 2010. Targeting ability and output controls in Australia's multispecies Northern Prawn Fishery. *European Review of Agricultural Economics*. 37(3): 313-334.
14. Kompas, T., **Dichmont, C.M.**, Punt, A.E., Deng, A., Che, T. N., Bishop, J., Gooday, P., Ye, Y. and Zhou, S. 2010. Maximizing Profits and Conserving Stocks in the Australian Northern Prawn Fishery. *Australian Journal of Agricultural and Resource Economics*. 54: 281-299
15. Punt, A.E., Deng, R.A., **Dichmont, C.M.**, Kompas, T., Venables, W.N., Zhou, S., Pascoe, S., Hutton, T., Kenyon, R., van der Velde, T. 2010. Integrating size-structured assessment and bio-economic management advice in Australia's Northern Prawn Fishery. *ICES Journal of Marine Science*. 67:1785-1801.
16. **Dichmont, C.M.**, Pascoe, S., Kompas, T., Punt, A.E., Deng, A.R. 2010. On implementing maximum economic yield in commercial fisheries. *Proceedings of the National Academy of Sciences*. 107(1): 16-21.
17. **Dichmont, C.M.**, Brown, I.W. 2010. Successful management of a data-poor fishery using simple decision rules. *Marine and Coastal Fisheries* 2: 1-13.

#### Reports chapters since 2010

1. **Dichmont, C.M.**, Dowling, N.A., Smith, A.D.M., Power, D., Smith, D.C., Galeano, D. 2013. Designing information requirements for the management of Commonwealth Fisheries. CSIRO. Brisbane. pp. 160.
2. Haddon, M., **Dichmont, C.M.**, Klaer, N., Pascoe, S., Penney, A., Smith, A.D.M., Smith, D.S., Vieira, S., Ward, P. 2013. Technical reviews of formal harvest strategies. Haddon harvest strategy review. CSIRO and ABARES. FRDC Final Report 2012/225. Hobart. 308 pp.
3. **Dichmont, C.M.** 2013. AFSC Rockfish Assessment Review in Juneau, Alaska 9-11 April, 2013. Centre of Independent Experts, Miami, USA. 49 pp.
4. **Dichmont, C.M.**, Ovenden, J.R., Berry, O., Welch, D.J., Buckworth, R.C. 2012. Scoping current and future genetic tools, their limitations and their applications for wild fisheries management. FRDC report 2011/035, 115 pp.
5. **Dichmont, C.M.**, Deng, R.A., Punt, A.E., Jarrett, A., Brown, M., Hill, F., Hutton, T., Venables, W.N. 2012. Developing and testing harvest strategies for the NPF under input and ITQ controls. AFMA Report No R2006/828a, 30 pp.
6. **Dichmont, C.M.**, Hill, F., Jarrett, A., Brown, M. 2012. Northern Prawn Fishery harvest strategy under output controls. AFMA Report No. R2006/828c, 30 pp. <http://www.environment.gov.au/coasts/fisheries/commonwealth/northern-prawn/pubs/northern-prawn-assessment-2012-att5.pdf>
7. **Dichmont, C.M.**, Jarrett, A., Hill, F., Brown, M. 2010 and 2012. Northern Prawn Fishery harvest strategy under input controls. AFMA Report No R2006/828b, 30 pp. <http://www.afma.gov.au/managing-our-fisheries/harvest-strategies/harvest-strategy-for-the-northern-prawn-fishery-under-input-controls/> (initial and updated version)

8. **Dichmont, C.M.**, Dowling, N.A., Smith, A.D.M., Smith, D.C., Haddon, M. 2011. Guidelines on Developing Harvest Strategies for Data-Poor Fisheries. FAO Special Publication. 27 pp.1
9. Dowling, N.A., Haddon, M., Smith, D.C., Dichmont, C.M., Smith, A.D.M. 2011. Harvest Strategies for Data-Poor Fisheries: A Brief Review of the Literature. FAO Special Publication, 43 pp.1
10. Haddon, M., Smith, D.C., Smith, A.D.M., **Dichmont, C.M.**, Dowling, N. 2011. Developing and Testing Data-Poor Harvest Strategies in Excel. FAO Special Publication Excel program and Guide.
11. **Dichmont, C.M.**, Pascoe, S., Jebreen, E., Pears, R.J., Brooks, K.J., Perez, P. 2012. Providing social science objectives and indicators to compare management options in the Queensland trawl planning process. FRDC Project No. 2009/100. 101 pp.
12. Pascoe, S., Williams, L., Johnston, B., **Dichmont, C.M.** 2011. Potential impacts of an effort unit reduction in the Queensland East Coast Trawl fishery. Commercial in Confidence Report to the Queensland Department of Employment, Economic Development and Innovation. CSIRO Publications. 35pp.
13. Dutra, L.X.C., Ellis, N., Boschetti, F., **Dichmont, C.M.**, de la Mare, W., Perez, P. 2011. Client Report: Healthy Waterways Management Strategy Evaluation: Learning and decision making within an adaptive framework – Final Report, 76 p.
14. O'Neill, M. F., Leigh, G. M., Martin, J., Newman, S., Chambers, M., **Dichmont, C. M.**, Buckworth, R. C. 2011. Sustaining productivity of tropical red snappers using new monitoring and reference points FRDC Project No. 2009/037, 101 pp.
15. Pascoe, S., Coglan, L., Punt, A.E., and **Dichmont, C.M.** 2010. Impacts of vessel capacity reduction programs on efficiency in fisheries: the case of Australia's multispecies northern prawn fishery. Proceedings of the 2010 International Institute of Fisheries Economics and Trade (IIFET) conference (CD ROM), Montpellier, France 13-16 July 2010.
16. **Dichmont, C.M.**, Deng, A.R., Punt, A.E., Venables, W.N., Pascoe, S., Zhou, S., Kompas, T., Kenyon, R., Bishop, J., van der Velde, T., Kienzle, M., Hutton, T., Plagányi, É., Miller, M., Donovan, A., Ye, Y. 2010. Developing techniques to estimate total allowable catches for the NPF major prawn species. FRDC Report No. 2007/018. 383 pp.
17. Hutton, T., **Dichmont, C.M.**, Pascoe, S. 2009. Banana prawns and TAC. In: Kompas, T., Grafton, Q. (Eds). A cost-benefit analysis of alternative management options for the Australian Northern Prawn Fishery. Sustainable Ecosystem Group, 93pp.
18. Dutra, L.X.C., de la Mare, W., Perez, P., Tickell, S., Cannard, T., Ellis, N., Pascual, R., **Dichmont, C.M.**, Thebaud, O., Bayliss, P., Moeseneder, C., Boschetti, F. and Pascoe, S. 2010. Catchment to Coast Management Strategy Evaluation in South East Queensland, Australia. Coast to Coast conference Program Handbook and Abstracts (Adelaide, September 20-24 2010), pp. 15.
19. Tickell, S., Pascual, R., Ellis, N., Moeseneder, C., de la Mare, W., Dutra, L.X.C., Perez, P., Cannard, T., Thebaud, O., Bayliss, P., **Dichmont, C.M.**, Boschetti, F. and Pascoe, S. 2010. Software Development for catchment-to-coast management strategy evaluation in South East Queensland, Australia. Coast to Coast conference Program Handbook and Abstracts (Adelaide, September 20-24 2010), pp. 53.
20. Perez, P., Dutra, L.X.C., Cannard, T., de la Mare, W., **Dichmont, C.M.**, Ellis, N., Boschetti, F., Moeseneder, C., Pascual, R., Tickell, S., Thebaud, O., Bayliss, P., Boschetti, F. and Pascoe, S. Learning and decision-making for catchment-to-coast management strategy evaluation in South East Queensland, Australia. Coast to Coast conference Program Handbook and Abstracts (Adelaide, September 20-24 2010), pp. 42.

#### Consultancies since 2010

1. **Dichmont, C.M.** 2013. AFSC Rockfish Assessment Review in Juneau, Alaska 9-11 April, 2013. Centre of Independent Experts, Miami, USA. 49 pp.
2. Pascoe, S., Williams, L., Johnston, B., **Dichmont, CM.** 2011. Potential impacts of an effort unit reduction in the Queensland East Coast Trawl fishery. Confidential report to the Queensland Department of Employment, Economic Development and Innovation, CSIRO, 36 pp.
3. **Dichmont, C.M.** 2011. SEDAR 26: Caribbean Queen snapper, silk snapper and redbait parrotfish Review 2011 individual report. Centre for Independent Experts, San Juan, Puerto Rico 17-21 October 2011.
4. **Dichmont, C.M.**, Haist, J., Apostolaki, A., Garcia, R. 2011. SEDAR 26: Caribbean Queen snapper, silk snapper and redbait parrotfish Review 2011 panel report. Centre for Independent Experts, San Juan, Puerto Rico 17-21 October 2011.
5. **Dichmont, C.M.** 2011. Chesapeake Bay blue crab stock assessment review 2011. Center for Independent Experts, Baltimore, Maryland, 29-31 March 2011.
6. **Dichmont, C.M.**, Hall, N, Punt, AE. 2010. Report of the external reviewers to the 20-24 May 2010 western rock lobster workshop. Perth, Australia. 20-24 May 2010.

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<sup>1</sup> These 3 FAO publications are being externally reviewed. Some additional paid work to the Excel sheet has meant no Report number has been drawn

**Supervision of students**

Cass Hunter, B.Sc. (hons). 2003.

Ben Stewart-Koster, PhD, QUT, changed topic

Athol Whitten, PhD, University of Melbourne, Graduated 2012

Sophie Gourguet, PhD, IFREMER, Graduated 2012