

CURRICULUM VITAE: DR DOUG ROTHERHAM

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SUMMARY

I have 15 years' experience doing scientific research on organisms in estuarine and coastal environments of south-eastern Australia. This includes a successful history of attracting, managing and completing large, collaborative research projects for the NSW government. My research interests and expertise lie in designing, analysing and reporting on rigorous biological experiments and ecological sampling for assessing and managing aquatic resources.

Throughout my career, I've demonstrated outstanding communication skills and successful brokering of scientific knowledge to a broad range of stakeholders. Plus, I have qualifications, skills and proven experience in plain English writing, editing, copywriting, web content authoring, content management and social media marketing.

SPECIALITIES

- Developing and delivering collaborative, scientifically-rigorous research projects for improved assessment and management of aquatic resources.
- Designing, analysing and interpreting rigorous scientific experiments using univariate and multivariate procedures.
- Writing, editing, reviewing and publishing scientific papers in high-impact journals.
- Communicating and brokering scientific knowledge to stakeholders and audiences from diverse backgrounds through a range of media.
- Project management – supervising and mentoring staff, preparing and monitoring budgets, reporting on milestones and results achieved; and complying with OH&S regulations.
- Copywriting, writing for the web, plain English writing, search engine optimization (SEO), content marketing strategy and social media marketing.

EDUCATION

PhD, Environmental Science, University of Wollongong 2000-2004

Thesis entitled: Fisheries biology, ecology and recreational harvesting of ghost shrimp, *Trypaea australiensis*, in south-eastern Australia. Funded by an Australian Postgraduate Award (APA) Scholarship.

BSc (Honours, Class 1), Biological Sciences, University of Wollongong 1995-1999

Dean's Merit list in final year.

Thesis entitled: Comparison of fish assemblages in *Zostera Capricorni* and *Posidonia australis* seagrass beds in three estuaries of south eastern Australia.

EXPERIENCE

Copywriter & Content Marketing Strategist Oct 2012–present
Founder: leanmeancopy.com

Associate Copywriter: copyschool.com
Associate Copywriter: huntedhive.com

As a copywriter and content marketing strategist, I've worked on a range of multimedia projects for clients.

My knowledge, skills and experience include:

- Writing persuasive web copy that complies with Web Content Accessibility Guidelines (WCAG 2.0).
- Ethical SEO (Search Engine Optimisation) copywriting that improves web page rankings and drives traffic.
- Monitoring web traffic and optimising conversions using analytics software.
- Using content management systems (CMS) to build websites and upload/edit content.
- Collaborating with web designers to improve information architecture and user experience (UX).
- Writing media releases, brochures, a TV commercial, blog articles, pay-per-click (PPC) advertisements and auto-responder emails.
- Social media marketing: writing and curating content for key social platforms that builds audiences and drives inbound traffic.
- Social media management: uploading content and monitoring audience engagement on client-owned channels.

Freelance Environmental Consultant

Aug 2012–present

Affiliate of Unisearch Expert Opinion Services (unisearch.com.au)
Associate of IC Independent Consulting (icic.net.au)

Providing scientific services related to the assessment and management of aquatic biological resources and environmental impacts for public and private sector clients. My experience includes:

- Engaged by Cardno Pty Ltd to analyse and interpret data on monitoring of coral assemblages as part of an Environmental Impact Assessment of dredging in Darwin Harbour.
- Contracted by Trade & Investment NSW to design experiments, analyse and interpret data, review and edit manuscripts and write scientific publications.

NSW Department of Primary Industries

Nov 2003–June 2012

Cronulla Fisheries Research Centre of Excellence

Senior Research Scientist

Jul 2011–Jun 2012

Research Scientist

Jul 2005–Jun 2011

Scientific Officer

Dec 2004–Jun 2005

For almost 8 years, I successfully led and managed external and core-funded research projects as a principal or co-investigator (see 'Research Grants' below). Much of my research experience has focused on developing scientific sampling tools and surveys for improving the assessment and management of estuarine fish resources and biodiversity in NSW. This collaborative research was the focus of large and consecutive federal grants (Fisheries Research and Development Corporation) and significant core funding.

Some of the relevant skills and achievements demonstrated during this period include:

- Designing and coordinating complex field experiments and surveys of populations and assemblages of fish fauna.
- Comprehensive knowledge and expertise in appropriate statistical analyses and interpretation of univariate and multivariate data (including PRIMER and PERMANOVA).
- Developing and maintaining successful research collaborations with high profile academics (AJ Underwood and MG Chapman, University of Sydney).
- Conceiving novel ideas for research to address departmental challenges and securing significant external (~\$620,000) and core funding (~ \$1,000,000).
- Writing, editing, reviewing and publishing scientific papers in international journals (17 peer-reviewed papers published to date – most as senior author and in high-impact journals).
- Successfully communicating and brokering scientific knowledge to diverse (and often hostile) stakeholder groups through reports, online lay summaries, articles, media releases and presentations.
- Presenting research findings at local and international conferences.

My administrative and project-management experience involved leading and supervising research teams of up to four full-time staff. This includes: recruiting staff based on merit selection; ensuring staff are properly trained; developing and managing individual work plans; mentoring in experimental design, statistical analyses and scientific writing; managing timesheets, overtime and leave; and managing and approving staff travel and expenditure.

My other direct responsibilities included:

- Planning, monitoring and reporting on budgets of up to \$300,000 pa (SAP, Spendvision).
- Achieving and reporting on milestones to funding bodies.
- Complying with requirements of OH&S legislation and Departmental policies (i.e. risk assessments, safe work method statements and field-work plans).
- Complying with Animal Care and Ethics guidelines and policies.

Fisheries Technician

Nov 2003–Nov 2004

I successfully coordinated and managed the setup logistics of an FRDC-funded, cross-departmental (NSW Fisheries/QLD DPI) fishery-independent survey of spanner crabs in northern NSW/southern QLD. This involved chartering commercial fishers to construct sampling gears and undertake sampling operations; and extensive consultation with scientific staff from both states. I also gained expertise in sampling commercial catches at ports and markets for biological data. This included taking measurements of length, removing otoliths and staging the reproductive condition of a range of different fishes. I've also processed, sectioned and aged thousands of otoliths.

University of Wollongong,
School of Earth and Environmental Sciences

Research Assistant (Casual)

1997–2003

Demonstrator for undergraduate practical classes. Supervised and trained small groups; demonstrated sampling methods; assisted students with identification of fishes and seagrasses; assisted students with the entry and analysis of data. Provided technical assistance on a project examining shallow water fish

assemblages on the south coast of NSW (FRDC project 97/204. Position involved sampling estuarine fish assemblages in more than 30 estuaries, collecting water quality data, fish identification, small boat handling and maintenance, logistic support and assistance in the preparation of milestone reports.

RESEARCH GRANTS

- *Solving bycatch and discard problems in NSW's recreational mud crab fishery* (2010–12). NSW Recreational Fishing Trust, Principal Investigator: D. Rotherham. Value of funding: \$20,000. The aim of this project was to test whether placing escape gaps into recreational crab traps would reduce the retention of bycatch (yellowfin bream and undersized mud crabs).
- *Integrating fishery-independent and -dependent data for improved sustainability of fisheries resources and other aspects of biodiversity*. FRDC project 2008/004 (2009–2013). Principal Investigator: D. Rotherham; Co-investigators: C.A. Gray; Collaborators: A.J. Underwood and M.G. Chapman. Value of funding: \$600,000. This project built on our previous FRDC grant and used an experimental approach to identify the most cost-effective and reliable long-term sampling programmes that should be invested in by NSW DPI for assessing estuarine fisheries resources, biodiversity and the effects of natural and anthropogenic impacts.
- *Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries*. (FRDC project 2002/097). Principal Investigator: Charles Gray; Co-Investigators: D. Rotherham (2004–2008), A.J. Underwood, M.G. Chapman. Funding ~\$1 million. The purpose of the study was to do the necessary pilot work to develop scientific tools and designs of sampling for large-scale and long-term fishery-independent surveys of fisheries resources in estuaries of NSW.

POSTGRADUATE STUDENTS

Caitlin Young, 2011–2012

MSc, University of NSW. Co-supervisor with Prof. Iain Suthers (UNSW)

Title of thesis: Overcoming obstacles to improved assessment and management of greentail prawns (*Metapenaeus bennettiae*) in NSW.

COMMITTEES

- Member of the independent Scientific Advisory Committee for FRDC project (2008/005) “*New and innovative approaches to monitoring of small-scale recreational fisheries*”. Primary Industries Victoria. My involvement on the Committee led to a more logical and scientifically-rigorous approach in delivering project aims.
- Scientific representative on the NSW Estuary General Management Advisory Committee (EGMAC), 2005–2012.

OTHER TRAINING

- How to be a Social Media Marketing Expert, American Writer's and Artists Inc. 2013.
- Introduction to SEO and Adwords Copywriting, 2012. Australian School of Copywriting.
- Copywriting: Writing for Profit, 2012. Australian School of Copywriting.
- Copywriting 2.0, 2012. American Writer's and Artists Inc.
- NIH Plain Language Online Training, 2012.
- Diploma in Web Content, 2012. Contented Enterprises.
- Design of Biological Experiments and Ecological Sampling. A two-week course taught by A.J. Underwood and M.G. Chapman.
- Senior First Aid, St John.

- Dealing with the Media. NSW DPI.
- Microsoft Access 2000. Forrest Training.
- Occupational Health and Safety Awareness Workshop. Ken Forbes and Associates.
- Occupational Health and Safety Risk Management. Courtenell Pty Ltd.
- Survival, Firefighting and OH&S. OTEN/TAFE NSW.
- Sea Safety and Survival Course. OTEN/TAFE NSW.
- Elements of Shipboard Safety. OTEN/TAFE NSW.
- Small Boat Handling and Maintenance. OTEN/TAFE NSW.
- Merit Selection- picking the right person for the job. NSW DPI.
- Managing Conflict through Negotiation. Passimore Duff Pty Ltd.

PUBLICATIONS

Refereed papers in journals

Young CL, **Rotherham D**, Johnson DD, Gray CA (2013) Small-scale variation in reproduction and abundance of greentail prawn, *Metapenaeus bennettiae* Racek and Dall, 1965. *Journal of Crustacean Biology*, DOI: 10.1163/1937240X-00002172.

Rotherham D, Johnson DD, Macbeth, WG, Gray CA (2013) Escape gaps as a management strategy for reducing bycatch in net-covered traps for giant mud crab. *North American Journal of Fisheries Management*, 33, 307-313.

Rotherham D, Johnson DD, Kesby CL, Gray CA (2012) Sampling estuarine fish and invertebrates with a beam trawl provides a different picture of populations and assemblages than multi-mesh gillnets. *Fisheries Research*, 123-124, 49-55.

Gray CA, **Rotherham D**, and Johnson DD (2011) Consistency of temporal and habitat-related differences among assemblages of fish in coastal lagoons. *Estuarine, Coastal and Shelf Science*, 95, 401-414.

Rotherham D, Chapman MG, Underwood AJ, Gray CA, Johnson DD (2011) Untangling spatial and temporal variation in abundances of estuarine fish sampled with multi-mesh gillnets. *Marine Ecology Progress Series*, 435, 183-195.

Rotherham D, Macbeth WG, Kennelly SJ, and Gray CA (2011) Reducing uncertainty in the assessment and management of fish resources following an environmental impact. *ICES Journal of Marine Science*, 68, 1726-1733.

Rotherham D and West RJ (2009) Patterns in reproductive dynamics of burrowing ghost shrimp *Trypaea australiensis* from small to intermediate scales. *Marine Biology*, 156, 1277-1287.

Gray CA, **Rotherham D**, Chapman MG, Underwood AJ, Johnson DD (2009) Spatial scales of variation of assemblages of fish in coastal lakes sampled with multi-mesh gillnets: implications for designing research surveys. *Fisheries Research*, 96, 58-63.

Johnson DD, **Rotherham D** and Gray CA (2008) Sampling estuarine fish and invertebrates using demersal otter trawls: effects of net height, tow duration and diel period. *Fisheries Research*, 93, 315-323.

Rotherham D, Broadhurst MK, Gray CA and Johnson DD (2008) Developing a beam trawl for sampling estuarine fish and crustaceans: assessment of a codend cover and effects of different sizes of mesh in the body and codend. *ICES Journal of Marine Science*, 65, 687-696.

Rotherham D, Gray CA, Johnson DD and Lokys P (2008) Effects of diel period and tow duration on estuarine fauna sampled with a beam trawl over bare sediment. Consequences for designing more reliable and efficient surveys. *Estuarine, Coastal and Shelf Science*, 78, 179-189.

Rotherham D and West RJ (2007) Spatial and temporal patterns of abundance and recruitment of ghost shrimp (*Trypaea australiensis*) across hierarchical scales in south-eastern Australia. *Marine Ecology Progress Series*, 341, 165-175.

Rotherham D, Gray CA, Underwood AJ and Chapman MG (2007). A strategy for developing scientific sampling tools for fishery-independent surveys of estuarine fish in New South Wales, Australia. *ICES Journal of Marine Research*, 64, 1512-1516.

Rotherham D, Gray CA, Broadhurst MK, and Johnson DD, Barnes LM and Jones MV (2006) Sampling estuarine fish using multi-mesh gill nets: effects of panel length and soak and setting times. *Journal of Experimental Marine Biology and Ecology*, 331, 226-239.

Gray CA, Jones MV, **Rotherham D**, Broadhurst MK, Johnson DD, Barnes LM (2005) Utility and efficiency of multi-mesh gill and trammel nets for sampling assemblages and populations of estuarine fish. *Marine and Freshwater Research*, 56, 1077-1088.

Rotherham D and West RJ (2003) Comparison of methods for sampling populations of ghost shrimp, *Trypaea australiensis* (Decapoda: Thalassinidea: Callinassidae) *Fisheries Research*, 60, 585-591.

Rotherham D and West RJ (2002) Do different seagrass species support distinct fish communities in south-eastern Australia? *Fisheries Management and Ecology*, 9, 235-248.

Conference papers and posters

Rotherham D, Macbeth WG, Kennelly SJ, and Gray CA (2010) Integrating different sources of data to reduce uncertainty in the assessment and management of fisheries resources following an environmental impact. Oral presentation by D. Rotherham at the 2010 'Fishery-dependent information: making the most of fisheries information', conference, Galway, Ireland, 23-26 August 2010.

Rotherham D, Johnson DD, Kesby CL, Gray CA (2010). Sampling estuarine fish and invertebrates with a beam trawl provides a different (not 'better') picture of populations and assemblages than multi-mesh gillnets. Oral presentation by D. Rotherham at the 2010 'Fish Sampling with Active Methods' conference, Ceské Budejovice, Czech Republic 8 September to 11 September 2010.

Rotherham D (2010) Surveys of estuarine fisheries resources in NSW: who, what, why, where, when and how? Oral presentation given at the 'National Estuaries Network Science Day', Australian Museum, 1 December 2010.

Gray CA, **Rotherham D**, Chapman MG, Underwood AJ, Johnson DD (2007) A strategy for developing fishery-independent sampling tools. Poster presentation at the 2007 Fish Stock Assessment Methods for Lakes and Reservoirs – Towards the True Picture of Fish Stock, Conference Ceské Budejovice, Czech Republic.

Rotherham D, Gray CA, Underwood AJ and Chapman MG (2006) A strategy for developing scientific sampling tools for fishery-independent surveys of estuarine fish in New South Wales, Australia. Oral Presentation at the 2006 International Council for the Exploration of the Sea, Symposium, Boston, Massachusetts.

Rotherham D and Gray CA (2005) Developing fishery-independent sampling tools for surveys of estuarine ichthyofauna in New South Wales: an experimental framework. Proceedings of the 2005 Australian Society for Fish Biology Conference. In: M.J Phelan and H. Bajhau (Editors), A Guide to Monitoring Fish Stocks and Aquatic Ecosystems. The Australian Society for Fish Biology Workshop Proceedings 2005.

Reports and other

Rotherham D, Gray CA, Underwood AJ, Chapman MG and Johnson DD (2008) Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries. Final report to the Fisheries Research & Development Corporation for Project No. 2002/059. NSW

Department of Primary Industries – Fisheries Final Report Series No. 106. 135pp. ISSN 1449-9967.

Rotherham D (2004). Fisheries biology, ecology and recreational harvesting of ghost shrimp, *Trypaea australiensis* in south-eastern Australia. Unpublished PhD thesis. 309pp.

Kearney R and **Rotherham D** (2000) Literature search on the effects of commercial trawling on spawning and reproductive physiology of Orange Roughy (*Hoplostethus atlanticus*) Commissioned by The Orange Roughy Management Company Limited. Applied Ecology Research Group, University of Canberra ACT 2601.

Rotherham D (1999) Comparison of fish assemblages in *Zostera Capricorni* and *Posidonia australis* seagrass beds in three estuaries of south eastern Australia. Unpublished honours thesis, School of Biological Sciences, University of Wollongong, 95pp.

Rotherham D 1999. Fish Fussy about their Beds. *Fisheries NSW Magazine* pg 17.

REFEREES

Professor Steve Kennelly
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