

Hugh P. Possingham FAA
FULL CURRICULUM VITAE

Australian Research Council Federation Fellow 2006 – 2011

Director of Centre for Australian Environmental Decision Analysis, AEDA www.aeda.edu.au

Professor in the Departments of Mathematics and Zoology

Director of The Ecology Centre www.ecology.uq.edu.au

CONTACT DETAILS

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The University of Queensland
St Lucia, QLD 4072, Australia
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PERSONAL DETAILS

Born July 21st 1962 in Adelaide, Australia: Age 45
Married to Karen Anne Fiegert on July 1st 1985
Son, Nicholas Lawrence, born July 27th 1989
Daughter, Alexandra Constance, born December 26th 1990

EDUCATION

1968 - 79 St. Peter's College, Adelaide, Australia.
1980 - 83 University of Adelaide, Australia.
Majors: Biochemistry and Applied Mathematics
B.Sc. (Hons.) 1st class, Applied Mathematics (supervisor Dr W. Henderson)
1984 - 87 D.Phil., Oxford University, United Kingdom (supervisor Dr Michael Bulmer)
College – St Johns

ACADEMIC EMPLOYMENT

1987 - 88 Post-doctoral Research Associate with Prof Joan Roughgarden in Biological Sciences, Stanford University, USA.
1989 Post-doctoral Research Fellow with Prof Ian Noble in the Ecosystem Dynamics Group, Research School of Biological Sciences, Australian National University.
1989 Visiting Fellow in Biological Sciences, University of New South Wales.
1990 QEII Fellow in Ecosystem Dynamics Group, RSBS, Australian National University.
1991 - 93 Lecturer in Applied Mathematics, The University of Adelaide.
1994 - 95 Senior Lecturer in Applied Mathematics, The University of Adelaide.
1995 - 98 Professor/Foundation Chair/Head, Environmental Science, The University of Adelaide.
1999 - 00 Professor and Deputy Head, Applied and Molecular Ecology, The University of Adelaide.
2000 - Professor of Mathematics and Professor of Zoology, The University of Queensland
2001 - Director of The Ecology Centre
2003 - 06 Australian Research Council Professorial Fellow
2006 - Australian Research Council [Federation Fellow](#)
2006 - Director of [Applied Environmental Decision Analysis Research Centre](#), a Commonwealth Environmental Research Facility

MAJOR PRIZES AND SCHOLARSHIPS

1983	David Murray Scholarship (for top 3 rd year student proceeding to honours at The University of Adelaide)
1984	Amir Hassan Abdi Prize (for top Mathematics Honours student at The University of Adelaide)
1984	Rhodes Scholarship , Australia-at-large
1989	QEII Fellowship
1999	POL Eureka Prize for Environmental Research (with Dr David Lindenmayer)
2000	Inaugural Fenner Medal for Plant and Animal Science (Aust Academy Science) http://www.science.org.au/awards/fenmed.htm
2001	Australian Mathematics Society Medal http://www.austms.org.au/AMSInfo/medal.html
2003	Australian Research Council Professorial Fellowship
2003	Modelling and Simulation Society of Australia, General Systems Medal
2005	University of Queensland Supervision Excellence award (one of three)
2005	Elected Fellow of The Australian Academy of Science http://www.science.org.au/academy/fellows/2005.htm
2006	Awarded a Federation Fellowship by the ARC http://www.arc.gov.au/media/fedfellows_factsheet_06.htm

BROAD RESEARCH PROGRAMS:

- **Conservation Biology:** setting conservation priorities, reserve system design (especially marine), using decision theory ideas and economics to solve conservation problems, threatened species management, disturbance management, population viability analysis, biodiversity and climate change.
- **Other applied ecology:** fisheries management, vertebrate pest and weed management.
- **Basic ecological theory:** metapopulation dynamics, stochastic population modelling, population dynamics of marine organisms, avian community ecology, edge effects and fragmentation, landscape ecology.

EXAMPLES OF RESEARCH IMPACT

- Over the past decade we have developed a **systematic conservation planning tool** – **MARXAN** – that is now used by over 1300 users in over 80 countries worldwide. This tool is used for fine-scaled spatial prioritisation of conservation actions, from the level of a regional body, to a state or an entire country. The software **underpinned the rezoning of the Great Barrier Reef Marine Park**, the biggest systematically design reserve network in the world. The Nature Conservancy, the world's biggest conservation NGO, use MARXAN for most of their terrestrial and marine ecoregional planning. The software was developed with initial support from the Australian Federal Government and is now a *free* download from www.ecology.uq.edu.au/marxan.htm. It is being used to change the face of the planet and is under continuous development. In particular it is currently being transformed into MARZONE partially funded by EcoTrust for use in the California marine planning process.
- Our most recent research on allocating funds between biodiversity hotspots (*Nature* 2006; *PLoS* 2007) is of global significance. Two of the biggest global conservation NGOs are partially funding our research in this area to deliver global prioritisation schemes that will **influence the allocation of hundreds of millions of dollars**.
- In the early 1990s there was considerable debate in Australia about the logging of native hardwood forests. During this time I held two press conferences in Parliament House that were reported by the four major television networks. Research with Dr Lindenmayer influenced the conservation of large areas of Mountain Ash *Eucalyptus regnans* forest in Victoria.
- Early this decade our research, media statements, and publications through the "Wentworth Group", brought about decisions to **halt land clearing** in NSW and Queensland.

- My group's research underpins the frequent advice that I give to federal and state governments on a variety of conservation and broader environmental issues.

SUMMARY of RECENT SERVICE to the WIDER COMMUNITY

I average one seminar or talk per week all year on a wide diversity of topics above and beyond my formal teaching duties.

National scale

- I currently chair two federal government committees – the selection advisory panel for the market-based instruments committee <http://www.napswq.gov.au/mbi/panel.html> and the ministerial advisory committee on (Australia's) biodiversity hotspots <http://www.deh.gov.au/biodiversity/hotspots/index.html>.
- I was, until January 2006, the first chair of the statutory Biological Diversity Advisory Committee (BDAC) for over five years. This committee provides direct advice to the Federal Environment Ministers (Hill, Kemp and Campbell) on all biodiversity issue of national significance.
- Currently I am a member of “**The Wentworth Group**” which has played a national leadership role on environmental issues by through the publication of three documents – including “A blueprint for a living planet”. The group continues to provide independent advice to government and the public about matters of national environmental interest including the needs for research and dissemination of knowledge.
- In 2002 we wrote two reports on biodiversity conservation that were presented to the Prime Minister's Science Engineering and Innovation Council. These have helped to stop land-clearing over a lot of Australia, focussed ongoing policy reform on invasive species and protecting wild rivers.
- I am the **Director of AEDA**, one of three commonwealth environmental research facilities with an annual budget of 1.7 million dollars.
- Instrumental voice in the **rezoning of the Great Barrier Reef** (2004) and legislation that has lead to almost complete end to **land clearing** in NSW and QLD.

Involvement with Non-government organisations

Throughout my career I have worked in and with conservation non-government organisations - originally at a local and state level. Now more so at a federal and international level, although I remain involved in local issues where possible. Distinguishing my role between being a professional scientific advisor and an advocate for nature conservation is always interesting.

NOTES on RECENT SERVICE ROLES in UNIVERSITY

- My primary service role at The University of Queensland is as a Centre Director. As Director of The Ecology Centre I try to coordinate ecology across the University. In the past five years the University of Queensland has published more papers in the 21 highest impact factor Ecology journals than any other Australian University (behind four English Universities, Cambridge, Oxford, Imperial College and Sheffield and two Canadian Universities).
- Other **2006 UQ service** roles include:
 - chair of School of Integrative Biology research committee,
 - member of the management committee of the School of Physical Sciences,
 - member of the management committee of the School of Integrative Biology,
 - co-chair of a the “Student Experience” sub-committee that is working on a review of the BSc.
 - chair of the BACS IT advisory committee
 - chair of BACS research strength in ecology and “The ecology major”
 - various reviews
 - lead UQs position in the TERN/AEON part of NCRIS

SUPERVISION

Postdoctoral (25)

Brigitte Tenhumberg	1996 - 1998, 2000 – 2002	(University of Nebraska)
Shane Richards	1997 - 1998	(Calgary University)
Luo, Jia	1997 - 1998	
Mick McCarthy	1998 - 1999	(University of Melbourne)
Jemery Day	1998 - 1999	(CSIRO, Marine, Hobart)
Ian Ball	1999 - 2000	(Australian Antarctic Division)
Scott Field	1999 - 2004	(Berkeley, Politics)
Drew Tyre	1999 - 2001	(University of Nebraska)
Tony Pople	2000 - 2005	(QLD state govt.)
Steve Ball	2000 - 2001	(Landcare New Zealand)
Chris Wilcox	2002 - 2005	(CSIRO, Marine, Hobart)
Petra Kuhnert	2002 - 2004	(Queensland EPA)
Niclas Jonzen	2002 - 2003	(Lund University, Sweden)
Peter Baxter	2003 -	
Kerrie Wilson	2004 - 2007	(TNC Australia)
Tracey Regan	2004 - 2006	(Scripps, San Diego)
Severine Vuillemeier	2004 - 2005	(Lausanne Inst Tech, Switz.)
Iadine Chades	2005 - 2006	(INRA, Toulouse)
Che Elkin	2005 -	
Hiroyuki Yokomizo	2006 - 2007	(CSIRO Entomology)
Simon Linke	2006 -	
Romola Stewart	2006 -	
Judit Szabo	2007 -	
Melinda Buchanan	2007 - 2007	
Maria Beger	2007 -	
James Watson	2008 -	

PhD (24 complete, 14 current as **primary advisor** – includes current destination)

*UQ Deans commendation (top 10% of PhD students)

Geoffrey Tuck	1991 - 1994 (Bioeconomics) - Researcher, CSIRO, Hobart
Jemery Day	1991 - 1995 (Metapopulation theory) – Res. scientist, CSIRO
Shane Richards	1992 - 1996 (Larval distribution models) – Academic, Durham
Ian Lundy	1992 - 1997 (Population genetics) - Financial consultant
Asep Supriatna	1994 - 1998 (Predator/prey harvesting) - Academic, Indonesia
Louise Emmerson	1994 - 1999 (Ecology of Koonamore daisy) - Antarctic Div.
Ian Ball	1994 - 1999 (Natural resource modelling) – Antarctic Div. Hobart
Stephen Ball	1995 - 2001 (Metapopulation dynamics) – GIS consultant
Drew Tyre	1996 - 1999 (Population dynamics, scaling) – Univ Nebraska
Brett Bryan	1996 - 2000 (Biodiversity planning for revegetation) – CSIRO
Michael Westphal	1999 - 2003 (Optimal restoration – UC Berkeley) – World Bank
Romola Stewart	1999 - 2004 (PT, marine reserves – CALM, WA) - postdoc
Francis Pantus	2000 - 2007 (PT complex ecological models, CSIRO Marine)
Jonathon Rhodes	2001 – 2005* (Population modelling of koalas) - CSIRO
Norbert Menke	2001 - (Kangaroo spatial ecology) – NRM&W – state govt
Jessie Wells	2001 - (Rainforest ecology)
Tara Martin	2001 – 2005* (Avian landscape ecology) – UBC postdoc
Kerrie Wilson	2001 - 2004 (Reserve design) – TNC (Aust) Science Director
Andres Etter	2002 – 2005* (Landscape dynamics in Columbia) - Academic
Liana Joseph	2002 – 2007 (Rarity and monitoring) - Postdoc
Cindy Hauser	2002 – 2006* (Optimal harvesting) – Uni Melb postdoc
Emily Nicholson	2002 - 2006 (Optimal reserve design) – Princeton Uni postdoc
Nadiah Kristensen	2003 - 2005 (Resilience of ecological systems) - CSIRO
Michael Bode	2003 - 2006 (Marine population modelling) – Uni Melb postdoc

Jenni Garden	2003 – 2006 (Urban Landscape ecology) – Env consulting
Maria Beger	2004 – 2007 (Marine conservation, Pacific) - postdoc
Reinaldo Lourival	2004 – (Conservation planning)
Gunnar Keppel	2004 - (Pacific tropical forest ecology)
Eddie Game	2005 - (Marine conservation planning)
Eve McDonald-Madden	2005 - (Optimal monitoring)
Hedley Grantham	2005 - (Conservation planning)
Josie Carwardine	2006 - (Economics and conservation priorities)
Danielle Shanahan	2006 - (Vertebrate metapopulations)
Oscar Venter	2007 - (IUCN lists and threat)
Sam Nicol	2007 – (Metapopulation management)
William Probert	2007 – (Optimal monitoring)
Takuya Iwamura	2007 – (Climate change and prioritisation)
Masters by research (2 complete)	
Batbold Dorjughem	1996 - 1999 (BIOCLIM/PVA) – Govt., Mongolia
Linda Cobiac	2001 - 2006 (Catchment modelling) – Medical modelling
Honours (45 complete)	
1991	Anna Ting, Richard Webster, Louise Emmerson
1992	Catherine Thomas, Janet Collier, Joseph Askew
1993	Maureen Goldfinch, Sandra Jackson, John Priest
1994	Joslin Moore, Joanna Chessel, Wendy Stubbs
1995	Juliette Woods, Natasha Garrett, Janet Matthews, David Gobbett
1996	Gary Luck, Jason White, Paul Thomas
1997	Daniel Stokes, Catherine Corrie, David Matthews, John Lorke
1998	Matt Turner, Bianca Leibich, Anne Koerber
1999	Jerry Smith, Richard Day, Travis Gotch, Sharn Lucas
2000	Amanda Lane
2001	Cass Hunter, Lauren Keim
2002	Michelle Ensbey, Sharon Forbes, Kate Bauer
2003	Anna Greig, Emily Saeck, Samantha Ryan
2004	Austin O'Malley
2005	Anna Grieg, Tracy Rout, Marissa McBride, Paul Smith, Chad Buxton
2007	Alienor Chauvenet

TEACHING

1986-87	Tutor in Finals Probability and Random Processes , Demonstrator in Preliminary Statistics , and Teaching Assistant in Non-parametric Statistics at Oxford University.
1988	Teaching Assistant for Principles of Ecology at Stanford University.
1989	Lecturer for the third year course Population and Community Ecology at UNSW, Sydney campus.
1990	Six lectures on Community Ecology for the Zoology Department, ANU; two lectures on Biomathematics in the School of Mathematical Sciences, ANU.
1991	Lecturer for Optimisation III, Mathematics I, Mathematical Biology III and Linear Programming II at The University of Adelaide.
1992-95	Lecturer for Mathematics I, Scientific Computing I, Mathematical Biology III, Biomathematics I (for Agricultural Science students) and Conservation Biology (Graduate Diploma in Ecology and Management).
1996	Conservation Biology III (12), Community Ecology II (6), Population Ecology II (9), Mathematical Biology III (12), and Agriculture, Environment and Society I (3).
1997-2000	Conservation Biology III (12), Environmental Biology I (9), Mathematical Biology III (3-12), Environment and Society I (6), Population Ecology (camp) plus seven one-off lectures.
2001-2002	Biomathematics (33) MATHS3104*; Rainforest Ecology (1 week field camp), Conservation Biology (2-15); plus 7-9 one-off lectures

- 2003-2005 **Biomathematics (15-18) MATHS3104; Rainforest Ecology (1 week field camp), Conservation Biology (11-19);** plus 3-6 one-off lectures
 2006-2007 **Conservation Biology (18);** plus several one-off lectures
 * *most recent formal undergraduate student evaluations 4.9/5.0, 4.9/5.0*

**RESEARCH GRANTS AND MAJOR CONSULTANCIES (Almost all as principal) 1997-
 (ignores many small grants and consultancies)**

- 1997 Koala management model - \$12 000 (DENR, SA)
 1997 - 98 Advice on fauna and flora conservation - Environment Australia - \$20 000
 1997 - 99 **Large ARC** (with Ian Noble, IAS - ANU) - \$115 000
 1997 - 99 **Large ARC** (with Mike Bull, Flinders) - \$235 000
 1997 - 99 **Large SPIRT** (Industry partner – EA, with Lindenmayer, IAS - ANU) - \$180 000
 1997 - 99 APA-I - Koala Management (with David Paton) - \$60 000
 1998 Small ARC - \$10 000
 1998 Small ARC (with Mike Keller) - \$10 000
 1998 Reserve design research consultancy - Environment Australia - \$40 000
 1998 - 00 APA-I - Lobster Fisheries (with Greg van Gaans) - \$60 000
 1998 - 00 FRDC - Octopus Predation on Lobsters (with Greg van Gaans) - \$160 000
 1999 - 01 FRDC – Prawn fisheries management (with Greg van Gaans) - \$200 000
 1999 - 01 **Large ARC** - \$125 000
 1999 - 01 **Large SPIRT** (Industry partner – WMC Limited) - \$200 000
 2000 - 01 National Marine Fisheries Service – US\$30,000 - consultancy
 2001 - 03 **Large SPIRT** (Industry partner – kangaroo industry, state govts) - \$350 000
 2001 - 03 **Large SPIRT** (Industry partner – AKF) - \$225 000
 2001 QLD EPA – Conservation Classification Peer Review - \$10,000
 2001 - 02 NSW Agriculture – Kangaroo genetics - \$55,000
 2001 - 03 UQ cross campus grant, Fraser Island fire (CI – Greg Baxter) - \$300,000
 2002 QLD EPA – MARXAN, CCCS, C-Plan comparison - \$40,000
 2002 - 04 **ARC Linkage** (Industry partner – WMC Limited) - \$250 000
 2002 - 04 **ARC Linkage** (Industry partner – DEH SA) - \$260 000
 2002 - 04 **GRDC** – weed risk assessment (Weeds CRC) - \$300 000
 2003 - 07 **ARC Discovery** – with Dr McCarthy, Decision theory for conservation - \$640,000
 2004 - 06 **ARC Linkage** – with Pressey, conservation planning (NSW NPWS) - \$200,000
 2005 - 07 **ARC Linkage** (Industry partner – WMC Limited) - \$320 000
 2005 - 07 Mediterranean conservation priority setting, The Nature Conservancy (USA), \$180,000
 2006 Development of MARXAN to include zoning, EcoTrust (USA) \$60,000
 2006 Global conservation priorities, Conservation International, \$30,000
 2006 - 08 Regional conservation priority setting, DEH, \$200,000
 2006 - 08 **ARC Discovery** - with Bob Pressey - \$510,000
 2006 - 10 **ARC Federation Fellowship** - \$1,550,000
 2006 - 10 CERF - \$6,900,000 – first-named PI and Centre Director
 2007 **ARC Linkage International** – Dr Salit Kark - \$123,000
 2007 - 09 **ARC Linkage** (Industry partner – TNC (Aust) - \$200 000
 2007 - 08 Marxan development, TNC Indonesia - \$20,000
 2008 – 10 **ARC Discovery** – with Cynthia Riginos - \$460,000
 2008 – 10 **ARC Indigenous Discovery** – Anthony Richardson, Cass Hunter - \$250,000

CONFERENCE PAPERS, WORKSHOPS

1998 ONWARDS

* *indicates invited speaker and all costs covered, boldface - overseas*

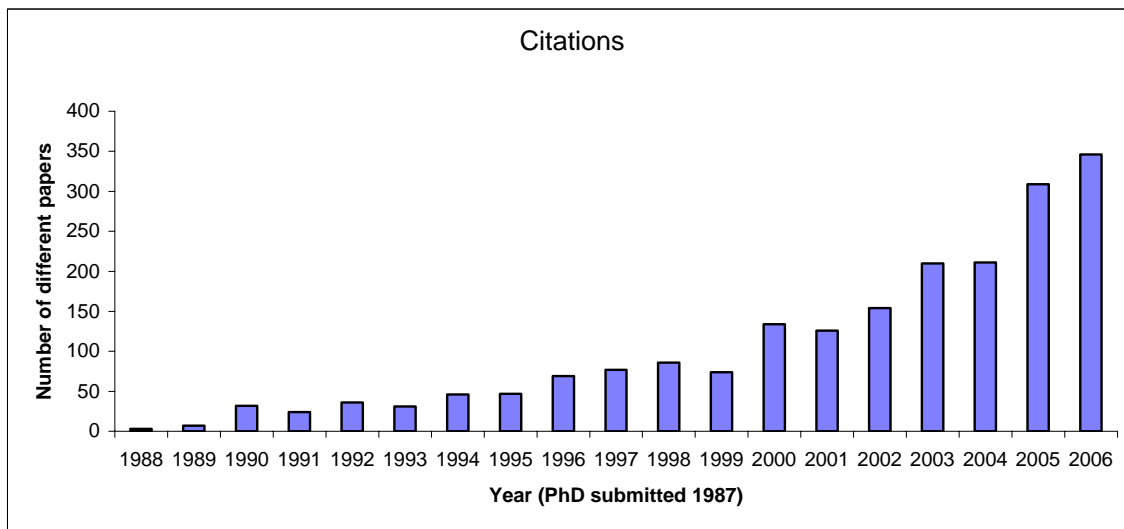
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|--------------|----------------|-------------------|--|
| 1998* | Feb | Gold Coast | Applied Maths Conference |
| 1998* | May | California | Theory of Marine Conservation |
| 1998 | July | Sydney | Conservation Biology |
| 1998* | July | Canberra | CSIRO conservation ecology |
| 1998* | Oct | California | Biodiversity working group |
| 1999* | Jan-Apr | California | Study leave - talks at UCSB, UC Davis, UC Santa Cruz, NCEAS |
| 1999* | March | San Diego | Population Viability Analysis |
| 1999 | July | Colorado | Landscape Ecology conference, IALE |
| 1999* | August | California | Working groups at NCEAS |
| 1999* | December | Perth | Dampier 300, Systematics conference |
| 2000* | January | Sweden | IUCN workshop |

2000*	April	Dunedin	University of Otago quantitative ecology workshop
2000*	April	Florida	Conservation Biology research priorities
2000*	October	Gatton,	Biodiversity Planning
2000*	November	Brisbane	Landscape Health in Queensland
2000*	November	Brisbane	Fire management
2000*	November	Washington	NMFS workshop on salomn reserve design
2000*	November	California	NCEAS working group on extinction risk
2001*	May	Finland, Sweden	Talks at University of Helsinki and SLU, Grimso
2001*	July	Brisbane,	Computational Technique and Applied Computing
2001	July	Hawaii	Society for Conservation Biology, symposium presenter
2001	August	Wisconsin	Ecological Society of America
2001*	September	Adelaide	Minerals Foundation Environment Workshop
2001*	October	Brisbane	Geocomputation
2001*	November	Cairns	Rainforest CRC
2001*	November	Brisbane	Greening Australia – opening of building
2001*	December	Canberra	MODSIM 2001
2002*	February	California	NCEAS working group
2002*	March	Adelaide	“Getting it right” conference
2002	August	Beijing, China	International ornithological congress
2002*	November	California	NCEAS working group on conservation decisions
2002*	November	Brisbane	Australian Coral Reef Society
2002	December	Cairns	Ecological Society of Australia
2002*	December	Canberra	Adapting to climate change, AAS
2003*	April	Pennsylvania	Penn State University,
2003*	April	Patuxent, MD	USGS adaptive management
2003*	May	New York	Cary conference, Institute of Ecosystem Studies
2003*	October	California	Biodiversity policy working group, Stanford
2003*	November	Christchurch	International Wildlife Congress
2003*	December	Panama	Smithsonian workshop on coral reefs
2003*	December	Armidale	Ecological Society of Australia
2004*	March	Wisconsin	Named lecture
2004*	March	Idaho/Montana	Named lectures
2004*	April	Trieste, Italy	Two workshops
2004	July	New York	SCB meeting
2004*	September	Leipzig	Ecological Economics
2004*	September	UK	Talks at cambridge, imperial, thesis examination
2005*	May	California	Research Dynamics working group
2005*	June	France	Resilience alliance workshop, Avignon
2005	July	Brazil	Society for Conservation Biology Meeting
2006*	March	California	Plenary address at US-IALE conference
2006*	April	Canada	Schafer lecture, UBC
2006*	June	Brisbane	Plenary: Philosophy of Ecology meeting
2006*	July	Adelaide	Plenary: National Science teachers conference
2006*	July	Townsville	Plenary: Computational Maths conference
2006*	July	Melbourne	Plenary: Australian Risk Analysis conference
2006*	Sept	Italy	Workshop on conservation of SE Asian mammals
2006*	Oct	Sth Africa	Workshop on reserve dynamics, Cape Town
2007*	March	Cambridge	Plenary address, Student Conservation Biology Forum
2007*	March	California	Workshop on Mediterranean conservation
2007*	April	Vancouver	Plenary speaker and inaugural MARXAN conference
2007*	July	Sth Africa	Workshop on reserve dynamics, Cape St Francis
2007*	July	Sth Africa	Plenary address: Society for Conservation Biology
2007*	July	Sydney	Keynote speaker, Pacific biodiversity conference
2007*	Sept	Perth	Plenary speaker: MEDICOS XI
2007*	Dec	Cairns	Resilience workshop
2008	<i>Grounded by beloved wife</i>		

PUBLICATION LIST and SUMMARY DATA

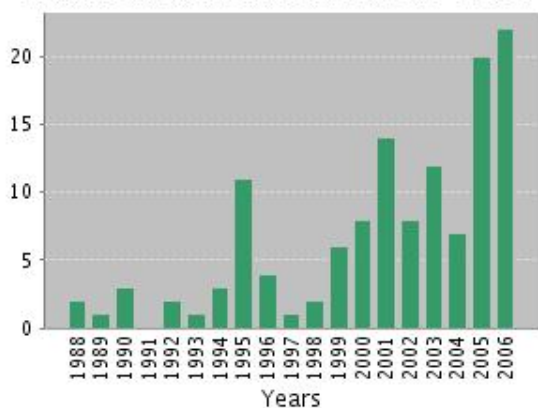
CITATIONS

(Repeatable data gathered electronically from ISI Citation Indices – Science, Social Science, Arts and Humanities <http://wos.isiglobalnet.com/> searching on *possingham h** - the **number of different papers** citing at least one paper of which *possingham h** was a coauthor)

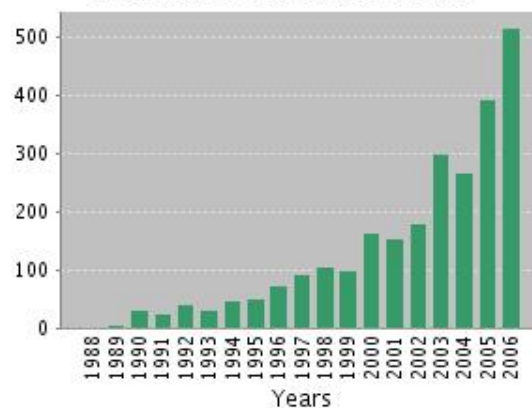


Number of publications and total number of citations – direct from Web of Science Jan 4 2007

Published Items in Each Year



Citations in Each Year



H factor: 29

M factor: 29/19 = 1.53

Journal articles from Web of Science – 148 published

2007

1. Donato DB, Nichols O, **Possingham H**, et al. A critical review of the effects of gold cyanide-bearing tailings solutions on wildlife ENVIRONMENT INTERNATIONAL 33 (7): 974-984 OCT 2007
2. Wilson KA, Underwood EC, Morrison SA, et al. [Conserving biodiversity efficiently: What to do, where, and when](#) PLOS BIOLOGY 5 (9): 1850-1861 SEP 2007

3. Pople AR, Phinn SR, Menke N, et al. [Spatial patterns of kangaroo density across the South Australian pastoral zone over 26 years: aggregation during drought and suggestions of long distance movement](#) JOURNAL OF APPLIED ECOLOGY 44 (5): 1068-1079 OCT 2007
4. Vuilleumier S, Wilcox C, Cairns BJ, et al. [How patch configuration affects the impact of disturbances on metapopulation persistence](#) THEORETICAL POPULATION BIOLOGY 72 (1): 77-85 AUG 2007
5. Garden JG, McAlpine CA, **Possingham HP**, et al. [Habitat structure is more important than vegetation composition for local-level management of native terrestrial reptile and small mammal species living in urban remnants: A case study from Brisbane, Australia](#) AUSTRAL ECOLOGY 32 (6): 669-685 SEP 2007
6. Rhodes JR, Tyre AJ, Jonzen N, et al. [Optimizing presence-absence surveys for detecting population trends \(vol 70, pg 8, 2006\)](#) JOURNAL OF WILDLIFE MANAGEMENT 70 (4): 1169-1169 AUG 2006
7. Field SA, O'Connor PJ, Tyre AJ, et al. [Making monitoring meaningful](#) AUSTRAL ECOLOGY 32 (5): 485-491 AUG 2007
8. Garden JG, McAlpine CA, **Possingham HP**, et al. [Using multiple survey methods to detect terrestrial reptiles and mammals: what are the most successful and cost-efficient combinations?](#) WILDLIFE RESEARCH 34 (3): 218-227 2007
9. Westphal MI, Field SA, **Possingham HP** [Optimizing landscape configuration: A case study of woodland birds in the Mount Lofty Ranges, South Australia](#) LANDSCAPE AND URBAN PLANNING 81 (1-2): 56-66 MAY 29 2007
10. Pillans S, Ortiz JC, Pillans RD, et al. [The impact of marine reserves on nekton diversity and community composition in subtropical eastern Australia](#) BIOLOGICAL CONSERVATION 136 (3): 455-469 MAY 2007
11. **Possingham HP**, Grantham H, Rondinini C How can you conserve species that haven't been found? JOURNAL OF BIOGEOGRAPHY 34 (5): 758-759 MAY 2007
12. Stewart RR, Ball IR, **Possingham HP** The effect of incremental reserve design and changing reservation goals on the long-term efficiency of reserve systems CONSERVATION BIOLOGY 21 (2): 346-354 APR 2007
13. Knight AT, Smith RJ, Cowling RM, et al. Improving the key biodiversity areas approach for effective conservation planning BIOSCIENCE 57 (3): 256-261 MAR 2007
14. Bode M, **Possingham H** Can culling a threatened species increase its chance of persisting? ECOLOGICAL MODELLING 201 (1): 11-18 Sp. Iss. SI FEB 10 2007
15. Rout TM, Hauser CE, **Possingham HP** Minimise long-term loss or maximise short-term gain? Optimal translocation strategies for threatened species ECOLOGICAL MODELLING 201 (1): 67-74 Sp. Iss. SI FEB 10 2007
16. Wagner LD, Ross JV, **Possingham HP** Catastrophe management and inter-reserve distance for marine reserve networks ECOLOGICAL MODELLING 201 (1): 82-88 Sp. Iss. SI FEB 10 2007
17. Carwardine J, Rochester WA, Richardson KS, et al. Conservation planning with irreplaceability: does the method matter? BIODIVERSITY AND CONSERVATION 16 (1): 245-258 JAN 2007
18. Nicholson E, **Possingham HP** Making conservation decisions under uncertainty for the persistence of multiple species. ECOLOGICAL APPLICATIONS 17 (1): 251-265 JAN 2007

2006

1. Joseph LN, Field SA, Wilcox, C. and Possingham HP. 2006. Presence-absence versus abundance data for monitoring threatened species. *Conservation Biology* 20:1679-1687.
2. Rondinini C, Wilson KA, Boitani L, Grantham H and Possingham HP. 2006. Tradeoffs of different types of species occurrence data for use in systematic conservation planning. *Ecology Letters* 9:1136-1145.
3. McAlpine CA, Rhodes JR, Callaghan JG, Bowen ME, Lunney D, Mitchell DL, Pullar DV and Possingham HP. 2006. The importance of forest area and configuration relative to local habitat factors for conserving forest mammals: a case study of koalas in Queensland, Australia.

- Biological Conservation* 132:153-165.
4. Etter A, McAlpine C, Phinn S, Pullar D and Possingham H. 2006. Unplanned land clearing of Columbian rainforests: spreading like a disease? *Landscape and Urban Planning* 77: 240-253.
 5. Nicholson E, Westphal MI, Frank K, Rochester WA, Pressey RL, Lindenmayer DB and Possingham HP. 2006. A new method for conservation planning for the persistence of multiple species. *Ecology Letters* 9:1049-1060.
 6. Watzhold F et al. 2006. Ecological-economic modelling for biodiversity management: potential, pitfalls, and prospects. *Conservation Biology* 20:1034-1041.
 7. Richardson EA, Kaiser MJ, Edward-Jones G and Possingham HP. 2006. Sensitivity of marine reserve design to the spatial resolution of socioeconomic data. *Conservation Biology* 20:1191-1202.
 8. Etter A, McAlpine C, Phinn S, Pullar D and Possingham H. 2006. Characterising a tropical deforestation wave: a dynamic spatial analysis of a deforestation hotspot in the Columbian Amazon. *Global Change Biology* 12:1409-1420.
 9. Vuilleumier S and Possingham HP. 2006. Does colonization asymmetry matter in metapopulations? *Proceedings of the Royal Society B* 273:1637-1642.
 10. Regan TJ, McCarthy MA, Baxter PWJ, Panetta FD and Possingham HP. 2006. Optimal eradication: when to stop looking for an invasive plant. *Ecology Letters* 9:759-766.
 11. Nicholson E, Possingham HP. 2006. Objectives for multiple-species conservation planning. *Conservation Biology* 20:871-881.
 12. Baxter PWJ, McCarthy MA, Possingham HP, Menkhorst, P. and McLean, N. 2006. Accounting for management costs in sensitivity analyses of matrix population models. *Conservation Biology* 20:893-905.
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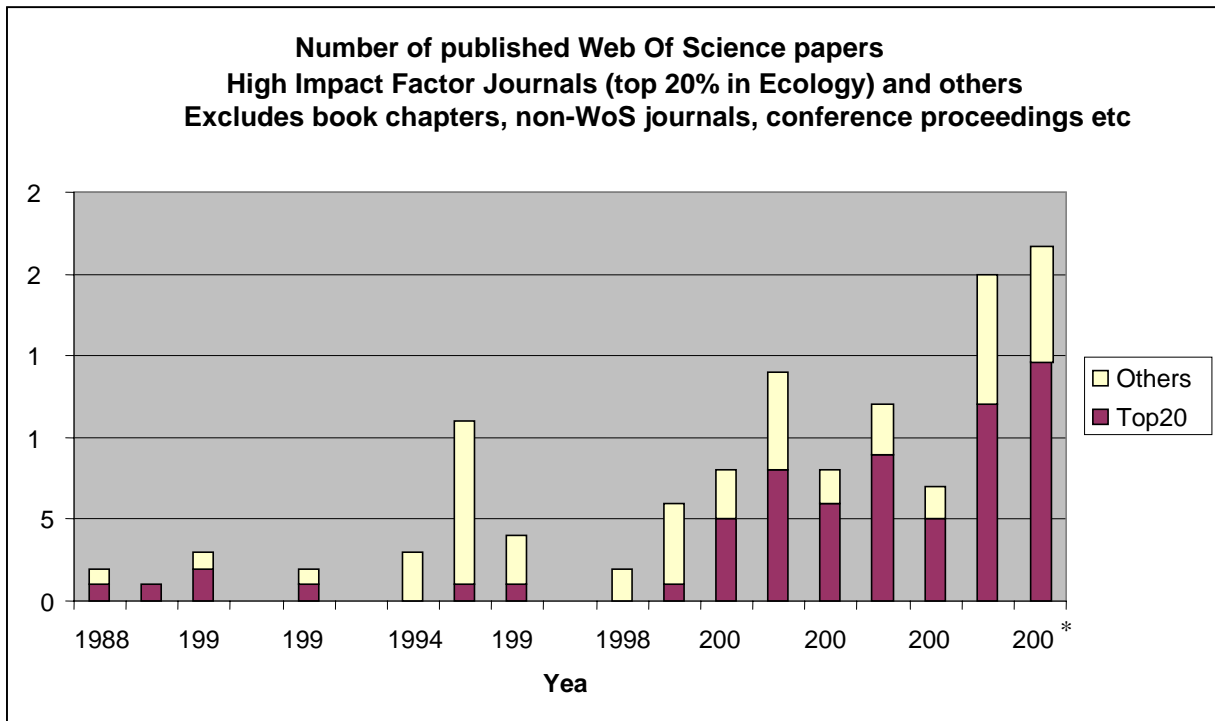
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Possingham received the top 1st class Honours degree in Mathematics and Statistics (Amir Hasan Abdi Prize) at The University of Adelaide in 1983. A Rhodes Scholarship enabled him to read for a DPhil in Biomathematics at Oxford University which he completed in 1987 after two and three quarter years. His thesis generated five first author papers in international journals (*American Naturalist*, *Ecology* (two), *Theoretical Population Biology*, and *Journal of Theoretical Biology*). The unifying theme was theory development for competition between species based on their foraging behaviour.

Competition has long intrigued ecologists and in order to develop a deeper understanding of the mechanism of competition among animals, Possingham addressed the complexities introduced by animal foraging behaviour. He developed a series of models of foraging to show that the ways in which competing species interact may be markedly affected by their respective foraging tactics. His *American Naturalist* paper uses a stochastic model to show why the resources that a territorial forager encounters are not distributed in the same way we would sample those resources. It provides a model for territorial defence by exploitation, an idea that hitherto had no theoretical basis. An *Ecology* paper develops a mechanistic model for how two species should compete in two habitats. It provides a predictive model of exploitation competition that Possingham rigorously tested with published data. This approach of using empirical research to develop testable theory for particular ecological systems, which was rare at that time, characterises much of his later work. More recently Possingham has extended his interest in competition theory through collaborative work on coexistence in eucalypt species (*Journal of Theoretical Biology*), tick parasites of lizards (*American Naturalist*), and species that forage on the same patchy food resource in different ways (*American Naturalist*).

Explaining the distribution and abundance of organisms is central to ecology. A fifteen month postdoctoral fellowship in the School of Biological Sciences at Stanford University with Professor Jonathan Roughgarden (1987-1988) sparked an ongoing interest in spatial marine population modelling. Possingham's primary research during that time was constructing the first fully spatial population model for a marine organism with a pelagic larval phase and a benthic adult phase (e.g. barnacles and abalone). This became part of a *Science* paper (454 citations) and a seminal paper in *Ecology* that explored the impact of oceanic currents on the distribution and abundance of marine organisms – something which had been discussed in the literature from an empirical perspective but never formalised.

Population cycling is one of the most intriguing areas of ecology. Observations of cycling in barnacles in the rocky intertidal were proving impossible to predict using classical modelling approaches. Possingham built a stochastic model based on an entirely new mechanism, episodic density-dependent predation by starfish, which quantitatively predicted the period of the cycles and their rate of decay (*American Naturalist*). A feature of this work is the use of stochastic models at a time when deterministic models dominated the field.

Possingham's interest in marine ecology was renewed in the late 90s through collaboration with researchers on problems of marine reserve design. Basic research and models concerning the size of marine reserves, the distribution of marine reserves in space, and the number of marine reserves (papers in *Ecological Applications* and *Marine Ecology Progress Series*) have underpinned actual marine system design. Indeed, decision support software produced by the Possingham lab was used to rezone the Great Barrier Reef Marine Park this year and is now the most widely used marine reserve system design software in the world. The software is underpinned by conceptual advances in conservation theory that accommodate issues of connectivity, spatial design rules, complementarity and conservation adequacy. These conceptual advances are covered in numerous publications including a widely cited book chapter published in 2000.

Population Viability Analysis (PVA) is the process of using a computer model to predict the impact of development or management on the probability a species will become extinct. It is an applied form of ecological modelling that developed in the USA in the early 1980s and has become very important to conservation because it is the only known way of determining the adequacy of conservation strategies. After moving to a Research Fellowship, and later a QEII Fellowship at The Australian National University with Professor Ian Noble, Possingham developed a model for predicting the probability of extinction of species threatened by habitat loss and modification. Construction and testing of this model on a wide variety of species with several colleagues has led to three basic advances. First, Possingham discovered that PVA is generally unable to accurately predict extinction risk, but is good for choosing between management options. Second, with David Lindenmayer and Michael McCarthy he embarked on a process of testing PVA models at a landscape scale. This was the first time that these ideas and models had been rigorously tested on a landscape scale. They discovered that for about a third of the species the models were quantitatively accurate, a third of the time they were only qualitatively accurate, but a third of the time the predictions were irreconcilable with the data. This has led to recommendations about how the theory needs to be advanced. Third, through experiences with arboreal marsupials living in forests that can be disturbed by fire or forestry, he argued that the models must include habitat dynamics, something that other researchers have only just begun to think about. This final advance has inspired ongoing basic theoretical research into the spatial population dynamics of species that live in dynamic landscapes (*Journal of Theoretical Biology*). He is now considered a world authority in this branch of applied population modelling, has been invited to several overseas conferences and was awarded the Eureka Prize for Environmental Research (with Dr David Lindenmayer). He was invited to write the definitive review of this topic for The Encyclopedia of Biodiversity and has written numerous papers on the topic in journals like *Conservation Biology* and *Biological Conservation*.

Conservation biology is intended to be a science where ecology, economics and the social sciences meet to deliver outcomes for the preservation of biodiversity. Unfortunately the science has missed an essential component – problem formulation and solution. In 1991 Possingham took an academic position in Applied Mathematics at The University of Adelaide where he developed his skills in optimisation and stochastic modeling. Six months study leave at Imperial College and Princeton and a move to the Foundation Chair (and Head of Department) of Environmental Science in 1995 was the start of Possingham's current research passion – the application of optimisation tools to problems in population management and conservation. Metapopulation ecology is a branch of spatial population ecology that deals with space in an idealised way. With his students and staff, Possingham has built stochastic metapopulation models within an optimisation framework that has initiated a theory of metapopulation conservation (several recent papers in *Ecological Applications*, *Conservation Biology*). Nature reserves are the cornerstone of the world's conservation strategy. Until recently the selection of conservation reserves has been *ad hoc*. Clear problem formulation, new algorithms, software, and clear thinking has enabled Possingham, in collaboration with others, to rewrite the theory and practice of nature reserve design and add a dynamic component to the problem (in press paper in *Ecology Letters*).

Other influential papers have applied this decision theory thinking to problems in conservation and environmental management. For example: optimal harvesting of spatially explicit fish populations (*Marine Ecology Progress Series*), optimal release of biocontrol agents (*Journal of Applied Ecology*), optimal captive breeding (*Conservation Biology* in press), using threatened species lists to make decisions (an invited and provocative comment in *Trends in Ecology and Evolution*), and optimal fire management for ecosystem and population viability (*Ecological Applications*). Most recently Possingham's group is extending these ideas to cover issues of optimal monitoring and optimal learning about complex ecological systems (August 2004 cover article in *Ecology Letters*). This research program is the subject of his recently awarded ARC Professorial Fellowship.

In addition to his commitment to research, Professor Possingham takes a very active role in the development of links between the scientific community and society as a whole particularly through all three levels of government, scientific societies, industry, the media and conservation NGOs. Currently his main non-university service activities include Chair of the Biological Diversity Advisory Committee (reporting directly to the Federal Minister of the Environment) and being a member of “The Wentworth Group”. Internationally he is an associate editor of the world’s leading conservation journal – *Conservation Biology*, having recently completed a term on the editorial board of the world’s leading evolutionary ecology theory journal, *The American Naturalist*.

In summary, the importance of Possingham’s contribution to science is providing a quantitative dimension to four main areas of ecology and conservation biology: ecological theory underpinned by behavioural and life-history mechanisms, spatial and stochastic marine ecological modelling, population viability analysis, and the application of decision theory to population management, reserve system design and ecological monitoring. Possingham has discovered that the application of clear thinking to the definition and solution of problems yields advances in applied ecology. He calls this applied theoretical ecology, a sub-discipline which he champions to an international audience. His breadth of interests and novel research agenda means that he is repeatedly hosted at international conferences and workshops. For example this year he will deliver three “named lectures” in the USA (Wisconsin, Idaho and Montana), plus invited seminars at Imperial College London, Trieste, Leipzig, Melbourne, Yale, Washington DC and New York. Possingham has been an invited member of ten different Working Groups since 1995 at the world’s premier ecological research centre – The National Centre for Ecological Analysis and Synthesis (NCEAS), in Santa Barbara, USA.