

Positions Held

- February 2008 – Lecturer, School of Biological and Chemical Sciences (SBCS), The University of the South Pacific, Suva, Fiji
February 2010
- November 2007 – Research Officer, Allan Wilson Centre for Molecular Ecology and Evolution, Massey University. Based at the SBCEs, The University of the South Pacific, Suva, Fiji
February 2008
- August 2005 – Postdoctoral Fellow, Instituto de Biociências, Universidade de São Paulo.
October 2007 Faculty sponsors: Prof. A. Salatino and Dr L. Lohmann
- August 2005 – Research Affiliate, Department of Ecology and Evolutionary Biology, Yale University.
July 2006 Faculty sponsor: Prof. M.J. Donoghue
- November 2000 – Postdoctoral Associate, Department of Ecology and Evolutionary Biology, Yale University.
August 2005 Faculty sponsor: Prof. M.J. Donoghue

Education

- 2001 Ph.D. (Plant Biology) Massey University, New Zealand
Title: *Evolution of the New Zealand alpine flora: origins, diversification and dispersal*
Advisors: Dr P.J. Lockhart & Dr A.W. Robertson
Field: Plant Biology/Molecular Ecology & Evolutionary Biology
- 1995 B.Sc (Hons. 1st Class) (Botany) Victoria University of Wellington, New Zealand
Title: *A molecular study of phylogenetic relationships within Rhopalostylis (Arecaceae)*
Advisor: Prof. P.J. Garnock-Jones
Field: Botany/Evolutionary Biology
- 1994 B.Sc (Botany) Victoria University of Wellington, New Zealand.

Awards & Grants

- 2008 Oceania Development Network Research Award. Project title: *Developing metagenomic tools for microbial community analysis and monitoring of microbial diversity in the Pacific Islands.*
Awarded to Dr R.C. Winkworth and Dr D.L.Rao
- 2006 Taylor & Francis Systematic Biology Publisher's Award for Excellence in Systematic Research
- 2005 "Deep Time" RCN Travel scholarship (travel to XVII International Botanical Congress)
Post-Doctoral Fellowship from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP). Project title: Phylogeny, evolution and phylogeography of *Anemopaegma* Mart. ex Meisn. (Bignoniaceae). Awarded to Dr R.C. Winkworth, Prof. A. Salatino and Dr L. Lohmann
- 2004 "Deep Time" RCN Travel scholarship (travel to Botany 2004)
"Deep Time" RCN Travel scholarship (travel to Deep Time Workshop)
- 2003 "Deep Time" RCN Travel scholarship (travel to Botany 2003)
"Deep Time" RCN Travel scholarship (travel to Deep Time Workshop)
- 1999 IMBS (Massey University) Travel scholarship (travel to XVI International Botanical Congress)
INR (Massey University) Travel scholarship (travel to XVI International Botanical Congress)
- 1996 Victoria University of Wellington Postgraduate Scholarship (PhD.) – declined

Peer Reviewed Publications: Published & In Press

- 2008 Trovó, M., Sano, P.T., & **Winkworth, R.C.** Morphology and environment: geographic distribution, ecological disjunction, and morphological variation in *Actinocephalus polyanthus* (Bong.) Sano (Eriocaulaceae). *Feddes Repert.* 119: 634-643

- Winkworth, R.C.**, Bell, C.D. & Donoghue, M.J. Mitochondrial sequences and Dipsacales phylogeny: mixed models, partitioned Bayesian analyses, and model selection. *Mol. Phylogenet. & Evol.* 46: 830-843
- Winkworth, R.C.**, Lundberg, J. & Donoghue M.J. Resolving campanulid phylogeny: some preliminary insights. *Taxon* 57: 53-65
- 2007 Sanmartín, I., Wanntorp, L. & **Winkworth, R.C.** West Wind Drift revisited: testing for directional dispersal in the Southern Hemisphere using event-based tree-fitting. *J. Biogeogr.* 34: 398-416
- 2005 **Winkworth, R.C.**, Wagstaff, S.J., Glenny, D. & Lockhart P.J. Evolution of the New Zealand alpine flora: origins, diversification and dispersal. *Org. Divers. Evol.* 5: 237-247
- Winkworth, R.C.**, Bryant, D., Lockhart, P.J. & Moulton, V. Biogeographic interpretation of split graphs: least squares optimization of branch lengths. *Syst. Biol.* 54: 56-65
- Winkworth, R.C.** & Donoghue, M.J. *Viburnum* phylogeny based on combined molecular data: implications for taxonomy and biogeography. *Am. J. Bot.* 92: 655-668
- 2004 **Winkworth, R.C.** & Donoghue, M.J. *Viburnum* phylogeny: evidence from the duplicated nuclear gene *waxy*. *Mol. Phylogenet. & Evol.* 33: 109-126
- Donoghue, M.J., Baldwin, B., Li, J. & **Winkworth, R.C.** *Viburnum* phylogeny based on ITS and chloroplast sequences. *Syst. Bot.* 29: 188-198
- 2003 Donoghue, M.J., Bell, C.D. & **Winkworth, R.C.** The evolution of reproductive characters in Dipsacales. *Int. J. Plant Sci.* 164 (Suppl.): S453-S464
- 2002 **Winkworth, R.C.**, Wagstaff, S.J., Glenny, D. & Lockhart P.J. Plant dispersal N.E.W.S. from New Zealand. *Trends Ecol. Evol.* 17: 514-520
- Winkworth, R.C.**, Robertson A.W., Grau, J. & Lockhart, P.J. The origins and evolution of the genus *Myosotis* (Boraginaceae). *Mol. Phylogenet. & Evol.* 24: 180-193
- 2000 Mclenachan, P.A., Stöckler, K., **Winkworth, R.C.**, McBreen, K., Zauner, S. & Lockhart, P.J. Markers derived from amplified fragment length polymorphism gels for plant ecology and evolution studies. *Mol. Ecol.* 9: 1899-1903
- 1999 **Winkworth, R.C.**, Robertson, A.W., Ehrendorfer, F. & Lockhart, P.J. The importance of dispersal and recent speciation in the flora of New Zealand. *J. Biogeogr.* 26: 1323-1327

Popular Articles

- 2009 **Winkworth, R.C.** Darwin and DNA: explaining the New Zealand flora. *New Zealand Science Review* (in press)
- Winkworth, R.C.**, Winder, L., & Lockhart P. Molecular Systematics: applying genetic tools to studies of Pacific biodiversity. *Melanesian Geo* (in press).
- 2008 Dawson, M.I. & **Winkworth, R.C.** The New Zealand flora: “Moa’s Ark” or “Fly-paper of the Pacific”? *New Zealand Garden Journal* 11: 19-23

Book Chapter

- 2010 **Winkworth, R.C.** & Meudt, H.M. Hypothesis testing and southern hemisphere plant biogeography. Book chapter accepted for *Evolutionary Bioinformatics: Making Meaning of Molecular Messages* (Academic Press).

Book Review

- 2006 **Winkworth, R.C.** A Review of: Mathematics of Evolution and Phylogeny: Olivier Gascuel (editor). 2005. Oxford University Press, New York. 416 pp. ISBN 0-19-856610-7. £45 (hardcover). *Syst. Biol.* 55: 532-533.

Manuscripts: In Review & Preparation

Singh, R., Narayan, V., McLenachan, P.A., **Winkworth, R.C.**, Mitra, S., Lockhart, P.J., Berry, L., Hatha, A.M., Aalbersberg, & Rao, D. Detection and diversity of pathogenic *Vibrio* from Fiji. In review for *Environ. Microbiol.*

Winkworth, R.C. & Donoghue, M.J. *Viburnum* phylogeny based on combined molecular data: insights into the repeated evolution of sterile marginal flowers. To be submitted to *Am. Nat.*

Winkworth, R.C., Naikatini, A., Tuiwawa, M.V., Perrie, L.R., Brownsey, P.J., Mclenachan, P.A. & Lockhart, P.J. The role of Antarctica and the subantarctic islands in South Hemisphere plant dispersal. To be submitted to *J. Biogeogr.*

Winkworth, R.C., Hennion, F., Hermant, M., Prinzing, A. & Wagstaff, S.J. The role of Antarctica in shaping Southern Hemisphere plant distributions. To be submitted to *Nature*.

Invited Presentations

- 2009 **Winkworth, R.C.** IUBS BioEd 2009 (Christchurch, New Zealand). *Darwin and Dispersal*
- 2008 **Winkworth, R.C.** School of Biological Sciences, University of Canterbury (Christchurch, New Zealand). *Piecing together the origins of the New Zealand flora*
- Winkworth, R.C.** School of Biological Sciences, University of Canterbury (Christchurch, New Zealand). *How to find your way around angiosperm taxonomy*
- Winkworth, R.C.** & Rao, D.L. Oceania Development Network Capacity Building Workshop (Apia, Samoa). *Developing metagenomic tools for microbial community analysis and monitoring of microbial diversity in the Pacific Islands*
- 2007 **Winkworth, R.C.** Royal Botanical Gardens Kew (London, England). *Phylogeny and Biogeography: tales from two hemispheres*
- 2005 **Winkworth, R.C.** DIVERSITAS 1st Open Science Conference: Integrating biodiversity science for human well-being (Oaxaca, Mexico). *The evolution of alpine plant diversity*
- Lohmann, L.G., **Winkworth, R.C.** DIVERSITAS 1st Open Science Conference: Integrating biodiversity science for human well-being (Oaxaca, Mexico). *A phylogenetic approach to understanding contemporary diversity patterns in Bignoniaceae (Bignoniaceae)*
- Winkworth, R.C.** Departamento de Botânica, Universidade de São Paulo (São Paulo, Brazil). *Phylogeny and Biogeography: tall tales from two hemispheres*
- Winkworth, R.C.** 56^o Congresso Nacional de Botânica (Curitiba, Brazil). *The use of phylogenies in biogeography.*
- Lohmann, L.G., Graham, A., Pirani, J.R., & **Winkworth, R.C.** XVII International Botanical Congress (Vienna, Austria). *The influence of dispersal on neotropical biogeography*
- Wagstaff, S.J., **Winkworth, R.C.**, Glenny, D. & Lockhart P.J. XVII International Botanical Congress (Vienna, Austria). *Significance of long-distance dispersal in the evolution of the New Zealand flora*
- Winkworth, R.C.** & Smith, S.A. XVII International Botanical Congress (Vienna, Austria). *Constructing biogeography: testing patterns of dispersal and speciation in the Southern Hemisphere*
- Winkworth, R.C.** Harvard University Herbarium Seminar Series, Harvard University. *New phylogenies: implications for Dipsacales evolution*
- 2004 Donoghue, M.J., Smith, S., **Winkworth, R.C.** & Ree, R. Royal Society Scientific Discussion Meeting, "Plant phylogeny and the origin of major biomes" (London, UK). *Assembly of temperate deciduous forests of the Northern Hemisphere*
- 2003 **Winkworth, R.C.**, Wagstaff, S.J., Glenny, D. & Lockhart P.J. ASPT colloquium "Alpine plant biogeography on a large scale: Current stages and prospects", Botany 2003 (Mobile, AL). *Evolution of the New Zealand alpine flora: origins, diversification and dispersal*
- 2002 Donoghue, M.J., **Winkworth, R.C.** & Bell, C.D. "Flowers: diversity, development, evolution" (Zurich, Switzerland). *Floral evolution in the Dipsacales*

- Winkworth, R.C.** Botany Dept., Trinity College, Dublin. *Two hemispheres of biogeography*
- 2001 **Winkworth, R.C.** Dept. of EEB, Yale University. *Evolution of the New Zealand alpine flora: origins, diversification and dispersal*
- 2000 **Winkworth, R.C.** & Lockhart, P.J. III Southern Connection Congress (Christchurch, New Zealand). *The importance of dispersal and recent speciation in the flora of New Zealand*

Contributed Presentations

- 2009 **Winkworth, R.C.**, Hennion, F., Hermant, M., Prinzing, A. & Wagstaff, S.J. Xth SCAR International Biology Symposium (Sapporo, Japan) *The role of Antarctica and the subantarctic islands in South Hemisphere plant dispersal* (poster)
- 2008 Lovo, J., **Winkworth, R.C.** & Mello-Silva, R. Monocots IV (Copenhagen, Denmark) *Systematics of Pseudotrimezia (Trimezieae, Iridaceae): evidence from three plastid regions* (poster)
- 2007 Farinaccio, M.A., **Winkworth, R.C.** & Mello-Silva, R., 58^o Congresso Nacional de Botânica (São Paulo, Brazil). *Filogenia de Oxypetalum (Apocynaceae, Asclepiadoideae)* (poster)
- Tank, D.C., **Winkworth, R.C.**, Lundberg, J. & Donoghue M.J. Botany (Chicago, IL). *An update on campanulid phylogeny*
- 2006 Temponi, L.G., Mello-Silva, R., Mayo, S.J. & **Winkworth, R.C.** 57^o Congresso Nacional de Botânica (Gramado, Brazil). *Análise filogenética de Anthurium sect. Urospadix (Araceae)* (poster).
- 2005 Smith, S.A. & **Winkworth, R.C.** Botany (Austin, TX). *Constructing biogeography: testing patterns of dispersal and speciation in the Southern Hemisphere.*
- Havell, D.C., **Winkworth, R.C.**, Bryant, D., Piripi, M., Carter, R., Lockhart P.J. & Moulton, V. XVII International Botanical Congress (Vienna, Austria). Neighbor-Net analysis of a New Zealand species radiation: alpine Ranunculus (poster).
- 2004 Donoghue, M.J. & **Winkworth, R.C.** Botany (Snowbird, UT). *Historical biogeography of Viburnum (Adoxaceae, Dipsacales)*
- Lohmann, L.G., Bell, C.D. & **Winkworth, R.C.** Botany (Snowbird, UT). *Bignoniaceae (Bignoniaceae): insights into biogeography and ecological diversification.*
- Winkworth, R.C.** & Donoghue, M.J. Botany (Snowbird, UT). *Localized incongruence between molecular data sets highlights complex evolutionary patterns in Viburnum.*
- 2003 **Winkworth, R.C.** & Donoghue, M.J. Botany (Mobile, AL). *Viburnum phylogeny, biogeography and character evolution – evidence from multiple genes.*
- Donoghue, M.J., Bell, C.D. & **Winkworth, R.C.** Evolution (Chico, CA). *Evolutionary implications of new phylogenies for the plant clade Dipsacales.*
- 2002 **Winkworth, R.C.** & Donoghue, M.J. Botany (Madison, WI). *Viburnum phylogeny based on granule-bound starch synthase genes.*
- 1999 **Winkworth, R.C.**, Lockhart, P.J. & Robertson, A.W. XVI International Botanical Congress (St. Louis, MO). *Dispersal and rapid morphological evolution in New Zealand Myosotis L. (Boraginaceae)* (poster).
- 1998 **Winkworth, R.C.** Molecular Ecology Meeting (Turangi, New Zealand). *Pliocene-Pleistocene: a time of major speciation in the flora of New Zealand?*

Teaching Experience

- 2009 The University of the South Pacific: Involved in team-teaching BI308 Environmental and Marine Microbiology. The course provides a broad overview of microbiology including structure, life cycle, phylogeny and physiology as well as applied microbiology. I contributed lectures related to diversity, phylogeny and metagenomics.

- The University of the South Pacific: Involved in team-teaching BI201 General Ecology. The course provides a broad overview of ecological process and theory. I contributed lectures related to evolutionary ecology, environmental conditions and resources, geographic patterns, birth and death, competition, conservation biology.
- 2008-2009 The University of the South Pacific: Co-ordinated and taught BI207 Tropical Plant Biology. The course focuses on broad concepts including tropical biodiversity, adaptations to tropical environments, ecological process, human use, and human impact on tropical environments. Sole taught in 2008 and team-taught in 2009.
- The University of the South Pacific: Co-ordinated and taught BI102 Plant Biology. The course introduces the diversity of photosynthetic organisms with the major groups discussed in terms of structure, life cycles, phylogeny and physiology. The importance of plants to the biosphere and to humans is discussed. Team-taught in 2008 and sole taught in 2009.
- 2008 The University of the South Pacific: Co-ordinated and sole taught BI206 Quantitative Biology. The course provides an introduction to data collection and analysis covering sampling design, hypothesis testing, and commonly used statistical tests (e.g., descriptive statistics, correlation, regression, analysis of frequency data, analysis of variance).
- 2008 The University of the South Pacific: Organised and taught “Molecular Phylogenetics Tutorial”. A series of seminars and demonstrations that provide a practical introduction to the molecular methods and phylogenetic analyses that will be used by postgraduate students.
- 2007 Universidade de São Paulo: Co-taught a graduate level block course entitled “O metodo comparativo e usos de filogenias” (The comparative method and uses of phylogenies). I contributed 3.5 days to this 10 day course including 9 hours of lecture and 12 hours of practical material. Topics included traditional taxonomy, systematics, and biogeography.
- 2006-2007 Universidade de São Paulo: Organised and taught “Molecular Phylogenetics Tutorial”. A series of seminars and demonstrations providing a practical introduction to the molecular methods and phylogenetic analyses likely to be used by postgraduate students.
- 2002 Evolution 2002 (Urbana-Champaign, IL): Assisted at a workshop on visualising complex phylogenetic patterns with networks.
- 1998-1999 Massey University: Organised and taught lecture and laboratory classes on molecular methods and phylogenetic inference for the senior undergraduate botany course.

Students Supervised

- 2008-present Hilda Waqa-Sakiti. PhD. candidate, The University of the South Pacific: “Taxonomy, phylogenetics and biogeography of the Fijian long-horned beetles (Coleoptera: Cerambycidae)”
- Tamara Osborne PhD. candidate, The University of the South Pacific: “Landscape genetics and phylogeography of the Fiji platymantids”
- Vinay Narayan PhD. candidate, The University of the South Pacific: “Developing metagenomic tools for microbial community analysis and monitoring of microbial diversity in the Pacific Islands”
- Mere Yabaki-Goundar MSc. candidate, The University of the South Pacific: “The genetic diversity of Fijian honeyeaters”
- Klaus Feussner MSc. candidate, The University of the South Pacific: “Survey of the genus *Sarcophyton* in Fijian waters from 2001-2005”
- 2003 Benjamin Russell-Smith, Yale University: Adviser on senior undergraduate thesis.
- 2002 Severn Cullis-Suzuki, Yale University: Adviser on senior undergraduate thesis.

Postgraduate Theses Examined

- 2008 Kumar, V. MSc. thesis, The University of the South Pacific: “Inhibition of primary colonizers by marine surface-associated bacteria”
- Jit, R. MSc. thesis, The University of the South Pacific: “Ecology of large trees in Fiji’s broad leaved lowland rainforest: Effects of slope, wind and crown asymmetry on buttressing”

Other Professional Experience

- 2009 Corpus Christi Teachers College (Suva, Fiji): Gave a presentation and lead a discussion on the basics of evolution for trainee primary school teachers.
- 2008-2010 The University of the South Pacific: Supervisor of the USP Molecular Biology Laboratory. Involved various management activities including supervision of a technician/research assistant.
- 2008 The University of the South Pacific: Organised and led a two day practical workshop introducing the basic molecular methods (e.g., tissue sampling, DNA extraction, PCR) for researchers from the Secretariat of the Pacific Community.
- The University of the South Pacific: SBCES Graduate Assistantship interview panel.
- The University of the South Pacific: Faculty evaluation panel for "USP Gold Medal".
- 2007-2008 The University of the South Pacific: Mentored postgraduate students conducting molecular systematic research. This involves providing support for both the molecular analyses and subsequent data analyses.
- The University of the South Pacific: Performed various management activities in the Molecular Biology Laboratory. Including equipment maintenance, purchasing and financial management.
- 2006 Universidade de São Paulo: Participated in field trips to the states of Bahia, Goiás, Minas Gerais, and Amazonas.
- 2005-2007 Universidade de São Paulo: Mentored post-graduate students conducting molecular systematic research. This involved providing support for both the molecular analyses and subsequent data analyses.
- Universidade de São Paulo: Web Design. Designed and implemented laboratory web page.
- Universidade de São Paulo: Postdoctoral Fellow. Phylogeny and biogeography of *Anemopaegma* (Bignoniaceae).
- 2005 XVII International Botanical Congress (Vienna, Austria): Organised symposium "*The impact of plant dispersal on biogeography: current understanding and prospects*" with L.G. Lohmann.
- 2004 "Deep Time" Workshop (George Washington University, Washington D.C.): Invited participant at workshop discussing inclusion of missing data in phylogenetic analysis.
- 2003 "Deep Time" Workshop (University of Florida, FL): Invited participant at workshop discussing methods for divergence time estimation.
- 2000-2005 Yale University: Laboratory management. Performed various management activities in the Donoghue lab. Including equipment maintenance, purchasing, financial management, and training of students and researchers.
- Yale University: Postdoctoral Associate. Phylogeny, biogeography and character evolution of *Viburnum* (Adoxaceae). Studies on broader relationships within Dipsacales.
- 1996-1998 Massey University: Participated in field trips to the New Zealand mountains collecting plant material for doctoral studies.
- 1996 Universität Bayreuth (Germany): Research visit to gain additional experience in molecular techniques.
- 1996-2000 Massey University: Doctoral Thesis. Research on the evolution of New Zealand alpine flora.
- 1995 Victoria University of Wellington: Honours thesis. Research on the phylogeny of *Rhopalostylis* (Arecaceae).
- 1994-1995 Victoria University of Wellington: Summer Research Assistantships. Participated on several DNA sequencing projects investigating the evolution New Zealand plant groups.
- 1993 Victoria University of Wellington: Herbarium Assistant. General curatorial activities.

Collaborators

François Hennion (Université de Rennes 1, France)
Peter Lockhart (Massey University, New Zealand)
Andreas Prinzing (Université de Rennes 1, France)
Dhana Rao (The University of the South Pacific)
Isabel Sanmartín (University of Uppsala, Sweden)
Steve Wagstaff (Landcare Research, New Zealand)
The New Zealand Plant Species Radiation Group

Professional Society Memberships

American Society of Plant Taxonomists
Botanical Society of America
International Biogeography Society

Peer Review Activities

Annals of Botany
Australian Systematic Botany
Belgian Journal of Botany
Biological Journal of the Linnean Society
Brittonia
Evolution
Gene
Journal of Biogeography
Molecular Biology and Evolution
Molecular Phylogenetics and Evolution
National Science Foundation
Natural Environment Research Council (UK)
New Zealand Journal of Botany
PLoS ONE
Proceedings of the Royal Society: Biological Sciences
South Pacific Journal of Natural Sciences
Systematic Biology