Dr Daniel Falster – Curriculum Vitae

Contact & profiles

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Summary of research outputs

Articles: 64 articles in leading international journals such as *Nature*, *PNAS*, *Nature Plants*, *Trends in Ecology & Evolution*, *Biological Reviews*, *New Phytologist*, *Methods in Ecology & Evolution*, *Journal of Ecology*, *American Naturalist*.

Citations: > 12200 total citations, > 1000 citations yr^{-1}, 19 papers cited > 100 times each, H-index of 34 [Google Scholar].

Datasets: I have produced and made publicly available two global compilations: the Biomass and Allometry Database, and the Coral Traits Database, as well as other datasets.

Software: I have produced and made publicly available important software packages, including the statistical package `SMATR` (used in over 1550 publications) and the growth model, `plant`.

Reproducible science: I am making my publications entirely reproducible, enabling others to reproduce, adapt, apply and extend my results.

Research highlights

Global shift towards trait-based ecology: My research has enabled global quantification and comparison of plant strategies by i) proposing four leading traits to capture global plant diversity, now quantified for many of the world's species (Westoby *et al* 2002, 2646 cites); ii) Developing methods enabled comparison of light capture among species (Falster *et al* 2003, 465 cites); iii) Quantifying a global trade-off in how conductive tissue in stems is arranged (Zanne *et al* 2010, 345 cites).

Trait-based community assembly: My work shows how tradeoffs in plant function mediate species coexistence and how we can predict trait mixtures from first principles (Falster *et al* 2017, 62 cites).

Global rules of plant competition: Using growth data from > 3 million trees in plots across the world, Kunstler *et al* 2016 (512 cites) shows how functional traits influence competitive interactions.

The Biomass and Allometry Database: Synthesises data collected in 176 different studies to create the world's largest, public database on individual plant allometry (Falster *et al* 2015, 102 cites).

How traits influence plant growth: My work explains why the effect of traits on growth changes with size, via models (Falster *et al* 2011, 2016, 2018, 178 cites) & meta-analysis (Gibert *et al* 2016, 88 cites).

Why do large parents have large offspring?: I showed how size-asymmetric competition among rival offspring explains this phenomena, unifying theory across taxa (Falster *et al* 2008, 102 cites).

Education

PhD (Ecology)	Macquarie University (22 Sep 2010), *"Towards a general theory of plant trait diversity"* (Supervisor: M Westoby)	
MSc (Hons. I)	Macquarie University (16/04/2004), *"Plant height strategies"* (Supervisor: M Westoby)	
BSc (Ecology)	University of New South Wales (05/10/2000)	

Positions

2021-curr	ARC Future Fellow (Level D, 1.0 FTE) – University of New South Wales Sydney
2017-2020	ARC Future Fellow (Level C, 0.8 FTE) – University of New South Wales Sydney
2011-2014	Post-doctoral visiting scientist (hosted by Dr Joe Wright, 4 yr 0.1 FTE) – Smithsonian Tropical Research Institute (Panama)
2016	Research Fellow (Level C, 1 yr) – Macquarie University
2011-2015	ARC Australian Post-doctoral Fellow (Level B, 3.5 yr) – Macquarie University
2010-2011	ARC Laureate Post-doctoral Fellow (Level A, 1 yr) – Macquarie University
2006-2009	IT & web support for ARC-NZ Research Network for Vegetation Function (2.5 yr, 0.1 FTE) – Macquarie University

	2006-2009	Summer Scholar (0.5 FTE) – International Institute for Applied Systems Analysis
	2004-2005	Research Assistant with Prof. Jarle Breivik (1.3yr 0.5 FTE) – Medical Faculty, University of Oslo (Norway)
	2004-2005	Research Assistant with Prof. Nils Chr. Stenseth (1yr 0.5 FTE) – Centre for Ecological and Evolutionary Synthesis, University of Oslo (Norway)
	2000-2002	Research Assistant with Prof. M Westoby (2 yr) – Macquarie University
	2005	Research Assistant, ARC-NZ Research Network for Vegetation Function (6 mo) – Macquarie University
	2004	Visiting Researcher with Prof. Göran Ågren (3 months) – Swedish Agricultural University, Sweden
	2000	Summer student with Dr Brad Murray (3 months) – CSIRO Plant Industry

Honours & awards (2006-)

2019	**Fenner Medal** – Australian Academy of Sciences
	Research Impact Award – UNSW Evolution & Ecology Research Centre
2015	**Next Generation Ecologist** – Ecological Society of Australia
2014	**Creativity and contributions to teaching award** – Department of Biological Sciences, Macquarie University
2012	**Award for Programs that enhance learning** – Office of Learning and Teaching, Macquarie University
2011	**Early Career Researcher (Highly commended)** – Macquarie University
2009	**Outstanding student presentation** – Australasian Evolution Society conference (ANU)
2008	**Fresh Science Media Course (1 of 16 invited)** – Science in Public
	Outstanding presentation in evolutionary ecology at annual conference – University of New South Wales Evolution & Ecology Research Centre
2006	**Aurelio Peccei Award for "outstanding achievement" during Summer Program** – International Institute of Applied Systems Analysis, Austria
2004	**Vice-Chancellor"s Commendation for MSc Thesis** – Macquarie University
2000	**Students in Free Enterprise UNSW team (National runners up)** – Enactus Australia

Grants

Total funding as lead = AUD 2.51m, Total (domestic) funding = AUD 7.9m.

2020	**Falster D**, Gallagher R, Sauquet H, Betbeder-Matibet L, Barrett R, Wenk E, Guja L, Wright I, Vesk P, Ooi M, Medlyn B, Cornwell W, Bayraktarov E, Andrew S, McCarthy J, Gross C, Standish R, Maitner B, Weaver H, Whalen A, Fuchs A, Holewa H, White M, Lloyd H, Gosper C, Raulings E "DP720 - AusTraits: a national database on the traits of Australia's complete flora" Australian Research Data Commons Data Partnerships **AUD 525,000**
2019	**Falster D**, Vesk PA "Escalating the arms race: understanding when and how trees get really tall" ARC Discovery Project **AUD 483,977**
	Falster D "High Quality Research Papers Scheme" UNSW **AUD 1,000**
	Falster D "AusTraits: a curated plant trait database for the Australian flora" Australian Research Data Commons, Transformative Data Collections **AUD 49,999**
	Vesk P, **Falster D**, De Kauwe M, Gallagher R, Guillera-Arroita G "Eucalypt futures: using functional traits to predict species distributions and responses to environmental change" Eucalypt Australia Multiyear Project **AUD 450,000**
	Falster D, Nakagawa S, Cornwell W, Navarro D, Richmond J, Warton D, Lyons M, Abramowitz G, Ukkola A, Kauwe M, Betbeder-Matibet L, Micheaux P, Laffan S "Building quality software packages in R" UNSW Research Infrastructure Grant **AUD 235,453**
	Falster D, De Kauwe M "Boden Conference" Australian Academy of Sciences **AUD 10,000**
2018	Kingsford R, Finlayson C, Alexander L, Murray N, **Falster D**, Fitzsimons J, Roux D, Reid L, Regan T, Grillas P, Thomas R, Norris V, Gawlik D, Scholz G, Brandle R, Ronan M, Junk W, Gardne R "A global standard for the status of wetlands of international importance" ARC Linkage **AUD 779,000**
2017	Gallagher R, **Falster D** "Collaborative trait research and data: a round table discussion" National Climate Change Adaptation Research Facility **AUD 10,000**

Abramowitz G, De Kauwe M, England M, Evans J, **Falster D**, Johnson F, Marshall L, Pitman A, Sharma A "Model evaluation web application" <u>UNSW Research Infrastructure Grant</u> **AUD 74,776**

2016　**Falster D** "Niche 2.0 - Australian and global plant diversity from first principles" <u>ARC Future Fellowship</u> **AUD 802,332**

2013　Wright I, Medlyn B, Prentice C, Westoby M, Zeppel M, Leishman M, Atwell B, **Falster D** "Ecophysiological instrumentation to measure leaf, stem and whole-plant CO_2 and water use" <u>Macquarie University Research Infrastructure</u> **AUD 82,000**

Durrant-Whyte H, Westoby M, **Falster D**, Müller R, Landgrebe T, Kane D, Smith P, Caetano T "Big data knowledge discovery: machine learning meets natural science" <u>Science Industry Endowment Fund</u> **AUD 4e+06**

2012　Brännström Å, **Falster D**, Franklin O, Holmgren J, Lindroos O, Nilsson U "Precision forestry for the future: enhanced forest management by optimized tree selection in thinning operations" <u>Swedish formas</u> **SEK 4,258,000**

2010　**Falster D** "Putting adaptation into vegetation models: towards a predictive theory of trait diversity and stand structure" <u>ARC Discovery Project (Postdoctoral Fellowship)</u> **AUD 310,000**

2009　**Falster D** "International travel grant (Vice-Chancellor's commendation)" <u>Macquarie University Postgraduate Research Fund</u> **AUD 4,500**

2006　**Falster D** "Aurelio Peccei Travel Award" <u>International Institute of Applied Systems Analysis (Austria)</u> **EUR 7,000**

Falster D <u>Australian Postgraduate Award</u> **AUD 70,000**

2002　**Falster D** "Research support grant" <u>Macquarie University Postgraduate Research Fund</u> **AUD 8,800**

1999　**Falster D** "Summer student research scholarship" <u>Centre for Plant Biodiversity (CSIRO)</u> **AUD 5,000**

Teaching　**Undergraduate**

<u>Bees 4517 BEES Honours</u>, University of New South Wales Sydney: 1 of 2 examiners for all students in cohort *"Thesis Examiner"*, 2020

<u>Bios 3601 Advanced Field Biology</u>, University of New South Wales Sydney: Wrote & delivered new field module (40hrs) *"Estimating forest biomass and carbon content"*, 2018-2020

<u>Bees 3041 Big Data in BEES</u>, University of New South Wales Sydney: Wrote & delivered new module for new course (40hrs) *"Big data in forest ecology"*, 2019-2020

<u>Honours Professional Skills</u>, University of New South Wales Sydney: Co-wrote & delivered (w Lee Rollins) new lecture *"How to build an academic CV"*, 2019 T1-T3; 2020 T1-T2

<u>Bios 2051 Flowering Plants</u>, University of New South Wales Sydney: Wrote & delivered new lecture & tutorial (2hrs) *"Life history strategies"*, 2019

<u>Advanced Science Program</u>, James Cook University: Wrote & delivered new lecture (1 hr) *"New knowledge (often) demands new methods"*, 2019

<u>Biol 347: Plants and Ecosystems</u>, Macquarie University: Wrote & delivered new lecture (1hr) *"Trait-based community assembly"*, 2015

<u>Unit 301069 Research Stories</u>, Western Sydney University: Wrote & delivered new lecture (1hr) *"From field plant ecology to computer modelling and big data"*, 2015

<u>Biol 391: Biological Sciences Capstone</u>, Macquarie Uni: Wrote & delivered 2hr lecture *"Biology in the age of data"*, 2014

Short courses & skills workshops

<u>BEES Coding and Statistics Course</u>, University of New South Wales Sydney: Co-wrote & delivered (w W Cornwell) 2 day course for HDR students/staff *"Intermediate coding in R"*, 2020

<u>BEES Coding and Statistics Course</u>, University of New South Wales Sydney: Co-wrote & delivered (w W Cornwell, M Lyons) 2 day course for HDR students and staff *"Introduction to coding in R"*, 2018-2020

<u>Annual conference</u>, Ecological Society of Australia: Co-wrote & delivered (w S Windecker, J Yen, N Golding) 1 day course *"Taking your R skills to the next level: four great strategies for reproducible research"*, 2019

<u>E&ERC Bag of Academic tricks</u>, University of New South Wales Sydney: Co-wrote & delivered (w Lee Rollins) 1hr lecture *"How to build an academic CV"*, 2018

<u>E&ERC Bag of Academic tricks</u>, University of New South Wales Sydney: Wrote & delivered 1hr lecture *"Tips for improving quantitative skills"*, 2017

<u>Software carpentry bootcamp</u>, ResBaz, ResBaz/Software carpentry (University of Sydney): Co-wrote & delivered (w J Madin, D Noble, & 3 helpers) 2 day course *"Intermediate R"*, 2016

<u>R users group</u>, Macquarie University: Wrote & delivered new tutorial (!hr) *"Publication quality plots in R"*, 2016

<u>Software carpentry bootcamp</u>, University of NSW: Co-wrote & delivered (w R FitzJohn, D Barneche, 4 helpers) 2 day course *"Intermediate R"*, 2014

<u>Software carpentry bootcamp</u>, University of Technology Sydney: Co-wrote & delivered (w R FitzJohn, D Barneche, 4 helpers) 2 day course *"Intermediate R"*, 2014

<u>Software carpentry bootcamp</u>, Macquarie University: Participated as 1 of 4 helpers, assisting Greg Wilson 2 day course *"Introduction to Scientific Programming"*, 2013

<u>Genes to GeoSceinces outreach course</u>, Macquarie University: Co-wrote & delivered (w R FitzJohn) 8 x 1.5 hr tutorials teaching programming skills *"Nice R code"*, 2013

<u>Self study course</u>, Umeå University Sweden: Wrote & delivered 8 reading topics designed for PhD student with background in mathematics *"Readings in plant ecology"*, 2013

<u>Genes to GeoSceinces outreach course</u>, Macquarie University: Wrote & delivered 2 day course *"Modelling population dynamics: using first year math to model population growth rates, survival, and fitness"*, 2011

Supervision	Postdoc	Elizabeth Wenk, Macquarie University (2011-2015, 0.2 FTE), Supervisor *: "Reproductive allocation in native plants."*
		Anaïs Gibert, Macquarie University (2014-2015), Co-supervisor *: "Testing theory about plant growth."*
		James Camac, Macquarie University (2013-2015), Supervisor *: "New methods for modelling mortality."*
		Rich FitzJohn, Macquarie University (2013-2015), Co-supervisor *: "New software for simulation plant growth & dynamics."*
	PhD	Charlie Hinchliffe, University of New South Wales Sydney (2017-present), joint supervisor *: "Growth & mortality of larval fish."*
		Dony Indiarto, University of New South Wales Sydney (2018-present), joint supervisor *: "Effect of climate change on trait mixtures."* Scientia scheme
		Pietro Pollo, University of New South Wales Sydney (2019-present), secondary supervisor *: "Understanding male mate choice."* Scientia scheme
		Emma Gray, Macquarie University (2014-2017), Co-supervisor *: "Growth rates and functional traits of tropical rainforest and savanna species."*
		Magnus Lindh, Umeå University (Sweden) (2008-2012), International collaborator *: "Evolution of Plants - a mathematical perspective."*
		Maud Combaul, IIASA (Austria) (2010), International collaborator *: "Evolutionary and ecological impacts of disturbance regimes on vegetation structures."*
	MSc	Bo Liu, University of New South Wales Sydney (2020-present), Co-supervisor *: "Fine-scale variation of growth rates of small pelagic larval fish in south-easternQueensland, Australia."*
		Raffale Rani, Umeå University (Sweden) (2012-2014), Co-supervisor *: "Plant growth & architecture."*
	Honours	John Wilshire, Macquarie University (2019), Co-supervisor *: "Tracking long-term changes in a floodplain vegetation community."* (1st class)

Undergrad.	Ashleigh Ford, University of New South Wales Sydney (2019), Supervisor *: "Summer research project: Tree rings in Australia."* Katrina Guo, University of New South Wales Sydney (2019 T2), Supervisor *: "Talented students program."* Ramses Reyes, University of New South Wales Sydney (2019 T2), Supervisor *: "Talented students program."*
Panel member	Casey Gibson, University of New South Wales Sydney (2017-present), PhD Nicholas Chu, University of New South Wales Sydney (2018-present), MSc Gabe O'Reilly, University of New South Wales Sydney (2018-present), PhD Alex Aloy, University of New South Wales Sydney (2018), PhD Manon Sabot, University of New South Wales Sydney (2018-present), PhD Zoe Xircostas, University of New South Wales Sydney (2019-present), PhD Giancarlo Chiarenza, University of New South Wales Sydney (2019-present), PhD Manon Sabot, University of New South Wales Sydney (2018-present), PhD Louis Dardare, University of New South Wales Sydney (2010), Honours
Research assistant	Simon Gorta, University of New South Wales Sydney (2020, 1mo), supervisor *: "History of vegetation in Myall Lakes region."* Saras Windecker, University of New South Wales Sydney (2018, 1mo), supervisor *: "Reproducibility of past research."* Caitlin Baxter, University of New South Wales Sydney (2019, 6mo), supervisor *: "Assembling the AusTraits database."* Diego Barneche, Macquarie University (2013-2014, 0.2 FTE), Supervisor *: "Assembling the Biomass & Allometry Database."* Angelica Vårhammer, Macquarie University (2013-2014, 0.2 FTE), Supervisor *: "Assembling the Biomass & Allometry Database."*

Institutional Service	Deputy Director (Graduate Program) of Evolution & Ecology Research Centre, UNSW Sydney, 2019-present
	Co-wrote documents for review & renewal of the Evolution & Ecology Research Centre, UNSW Sydney, 2020
	Contributed material on carbon farming for Fowlers Gap Project Group Final Report "Options for future management of Fowlers Gap Research Station", UNSW Sydney, 2020
	Compiled publication data for review of research centres in School of Biological, Earth & Environmental Sciences, UNSW Sydney, 2020
	Member Postgraduate Committee, School of Biological Earth & Environmental Sciences, UNSW Sydney, 2019-present
	Compiled the Annual Research Collection for School of Biological, Earth & Environmental Sciences (over 700 publications), UNSW Sydney, 2020
	Recruitment panel for postdoc position (w M Tanaka), UNSW Sydney, 2019
	Compiled the Annual Research Collection for School of Biological, Earth & Environmental Sciences (over 600 publications), UNSW Sydney, 2019
	Coordinator of Evolution & Ecology Seminar series; 30 talks over two years; achieved goal of 50:50 gender balance, UNSW Sydney, 2017-2018
	Host for visiting seminar speakers, Prof David Christian; Dr Adam Roff; Dr Remko Duursma; Dr Jerome Chave, (Macquarie University), 2015
	Contributed to review of post-doctoral experiences within the Department of Biological Sciences, Macquarie University, 2014
	Organised Q&A panel session on 'How to land a faculty job' for ECRs with 5 academics & ~30 students, Macquarie University, 2014
	Jointly developed new welcome protocol for new ECRs, Macquarie University, 2015
	Joint founder and member post-doctoral researcher committee, Macquarie University, 2014-2015
	Member Biological Sciences Quantitative Advice Committee, Macquarie University, 2011-2016
	Chair of Genes-to-Geosciences-Fund committee, Macquarie University, 2012-present

Professional Service & Memberships	Peer Reviewer for journals: Am Nat, AoB Plants, Aust J Ecol, Beh Ecol, Ecology, Ecology Letters, Evolution, Forests, Fun Ecol, Global Ecol Bio, J Ecol, J Plant Phys, J Theor Biol, Journal of Biogeography, New Phyt, Oec, Oikos, Perspectives in Plant Ecology, Evolution and Systematics, PLOS One, Proceedings B, TREE, & Zoo Sci, ongoing
	Grant Reviewer for: ARC, NSF, NERC, Czech, sDiv, ongoing
	Society member: Ecological Society Australia, Software Carpentry, Open Traits Network, ongoing
	Member of Conference Working Group: oversee running of annual conference for Ecological Society of Australia, 2017-present
	Joint founder of global network: Open Traits Network (http://opentraits.org/), 2018-present
	Joint founder of new research chapter in Ecological Society of Australia: Quantitative Ecology Research Chapter (https://esa-qerc.github.io/), 2018-present
	Opponent for PhD defence of Dr Karin Olsson: Danish Technical University (Copenhagen), 2015
	Leader of the data-sharing platform: AusTraits (http://traitecoevo.github.io/austraits.build/), 2016-present
	Member of management committee for the data-sharing platform: coraltraits.org, 2014-2016
	Founder and leader of data-sharing platform: Biomass and Allometry Database, 2012-2016
	Joint founder of new research chapter in Ecological Society of Australia: Theory of Australian Ecosystems, 2016-present

Professional Development	2019	Australian Academy of Science annual meeting (3 days), Canberra ACT
	2009	Australasian Evolution Society conference (2 days), UNSW Sydney
		Ecological Society of Australia conference (2 days), Launceston TAS
		Working with Google Earth Engine, 2 hr course, UNSW Sydney
		Sexual Misconduct Awareness, online course at UNSW Sydney
	2018	Engaging with policy makers: How to get your research noticed, UNSW Sydney panel discussion
		Research Integrity, online course at UNSW Sydney
		Working with Industry, 1 day course at UNSW Sydney
		ACEMS Intractable Likelihoods, 2 day course at UQ Brisbane
		Essentials of Supervision, 2 day course at UNSW Sydney
		Managing Students in Distress, online course at UNSW Sydney
		Ecological Society of Australia conference (4 days), Brisbane QLD
	2017	Data Carpentry Instructor training, online course from "The Carpentries"
		Macquarie University Genes to Geosciences Outlook conference (2 days), Sydney NSW
		Ecological Society of Australia conference (4 days), Pokolbin NSW
	2016	Ecological Society of Australia conference (4 days), Perth WA
		UseR conference (4 days), Stanford USA
		Sydney Bioinformatics Research Symposium, University of Sydney
	2015	Nature master-class: writing for the Nature family of journals (1 day course), Garvan Institute
		Ecological Society of Australia conference (4 days), Adelaide SA
		Ecostats: Technological advances between Ecology & Statistics conference, UNSW Sydney
		EUMacro conference, University of Copenhagen
		Knowledge Discovery Data Mining conference (2 days), Sydney NSW
		The Royal Society of NSW & Four Academies forum "The future of work" (1 day), Government House Sydney
	2013	HDR supervision (1 day), Macquarie University
		Software Carpentry instructors training course (5 day course), Software Carpentry Foundation
		Intecol conference (4 days), London UK
	2012	Ecological Society of Australia conference (4 days), Melbourne VIC
	2010	Responsible Service of Alcohol (1 day), Tafe NSW

	Research proposals" (Michael Gilling 1 day)', Macquarie University
	Global carbon cycling" (Colin Prentic 1 day)', Macquarie University
	Writing for journals & citation metrics" (M Gillings, 1 day)', Macquarie University
	Transition from PhD to research career (M Leishman, 1 day)', Macquarie University
	Australasian Evolution Society conference (3 days), ANU Canberra
	European Society for Evolutionary Biology conference (4 days), Turin Italy
2008	Constructing & working with models (H Kokko, 1 day)', Macquarie University
	Toughness, elasticity & breakage of biological materials (J Madin, 1 day)', Macquarie University
	Australian postgraduate course in current ecology & evolution (1 day), University of Sydney
	Fresh Science: Media skills for scientists (1 wk), Melbourne
	Ecological Society of Australia conference (4 days), University of Sydney
2007	Toastmasters Member (3 yr), Leichhardt
	Evolution conference (American Society of Naturalists, Society for the Study of Evolution, Society of Systematic Biologists, 4 days), Christchurch New Zealand
2005	Australian postgraduate course in current ecology & evolution (1 day), University of Queensland
	Fragilome: Fragile sites & chromosomal instability conference (3 days), Heidelberg Germany
	Ecological Society of Australia conference (4 days), University of Queensland
2002	St Johns Remote First Aid,
	2nd year course: Algorithms & Data Structures (14 weeks, placed 3/500), Macquarie University
	Australian postgraduate course in current ecology & evolution (1 day), James Cook University
	Ecological Society of Australia conference (4 days), James Cook University
2001	Australian postgraduate course in current ecology & evolution (1 day), University of Wollongong
	Ecological Society of Australia conference (4 days), University of Wollongong
2000	Ecological Society of Australia (4 days), La Trobe University VIC

Presentations **Department Seminars**

2018	University of Canberra (Australia)
	University of Wollongong (Australia)
	University of New South Wales Sydney (Australia)
2017	Monash University (Australia)
	Western Sydney University (Australia)
2016	University of Queensland (Australia)
	Princeton University (USA)
	Smithsonian Tropical Research Institute (Panama)
2015	IRSTEA Grenoble (France)
	CNRS Montpellier (France)
	University of Sydney (Australia)
	Macquarie University (Australia)
2012	CTFS Science talk (Smithsonian Tropical Research Institute, Panama)
	University of New South Wales (Australia)
2006	University of Wageningen (Netherlands)

Invited plenaries

2015	Falster D. *Towards a theory of plant trait diversity.* Ecological Society of Australia (Adelaide)
	Falster D. *Modelling strategic behaviour during combat (in plants).* Eco-Stats: technological advances between ecology & statistics (Sydney)
2013	Falster D. *Trait-based approaches in plant ecology: towards a theory of form & function.* Trait-based approaches to Ocean Life (Copenhagen)
2010	Westoby M & Falster D. *Species traits, niches, & community assembly.* Gordon Conference on Metabolic Scaling (Uni New England, USA)

First-Authored talks

2018   Falster D. *Predicting vegetation diversity & structure from ecological & evolutionary first principles.* Society for Mathematical Biology (Sydney)

Falster D. *New theory on how functional traits influence plant growth & shade tolerance across the life cycle.* Ecological Society of Australia (Brisbane)

2017   Falster D. *5 recommended techniques for modelling tree mortality.* Ecological Society of Australia (Pokolbin)

Falster D. *From Lotka-Volterra to Trait databases: a daring organisation of theories about ecological strategy.* Ecological Society of Australia (Pokolbin)

Falster D. *Why competition matters.* Genes to Geosciences Outlook (Sydney)

2016   Falster D. *The plant package for R.* Demography beyond the population (virtual conference)

Falster D. *The challenge of combining 176 x #otherpeoplesdata to create the Biomass And Allometry Database (BAAD).* UseR (Stanford, USA)

Falster D. *Reproducible research in R with remake.* Sydney Bioinformatics Research Symposium

Falster D. *Key trade-offs maintaining successional diversity.* Ecological Society of Australia (Perth)

2015   Falster D. *Data-driven ecology.* Knowledge Discovery & Data Mining (Sydney)

Falster D. *Trait-based forest assembly generates neutral outcomes from niche processes.* EU-Macro (Copenhagen, Denmark)

Falster D. *The challenge of combining 176 x #otherpeoplesdata to create the Biomass And Allometry Database (BAAD).* Ecological Society of Australia (Adelaide)

2013   Falster D. *Growth trajectories: a new way of understanding the influence of traits on plant growth.* Intecol (London)

2012   Falster D. *Growth trajectories: a new way of understanding the influence of traits on plant growth.* Ecological Society of Australia (Melbourne)

2009   Falster D, Brännström Å, Westoby M & Dieckmann U. *Evolution of growth strategy in size-structured plant communities.* Australasian Evolution Society (Canberra)

2008   Falster D, Moles AT & Westoby M. *Big babies & small families make evolutionary sense - title implications for ecology?.* Ecological Society of Australia (Sydney)

2007   Falster D, Moles AT & Westoby M. *A general model for scaling of offspring size & adult size.* Evolution (Christchurch), New Zealand

2005   Falster D & Westoby M. *Coordination of height with other traits.* Ecological Society of Australia (Brisbane)

2001   Falster D & Westoby M. *Plant strategies for light capture: the influence of leaf angle & leaf size.* Ecological Society of Australia (Wollongong)

2000   Falster D & Westoby M. *Digitising leaf display to compare architectures.* Ecological Society of Australia (Melbourne)

Workshops

2019   Falster D, Gallagher R, Madin J. *Open & reproducible workflows for combining lots of #otherpeoplesdata.* Royal Botanic Gardens Traits workshop (Sydney)

2018   Falster D, Gallagher R, Madin J. *Some challenges of working with trait data.* Atlas Living Australia Traits Workshop (Canberra)

Falster D. *Prospects for handling complex stand structures in CABLE.* CABLE Science Meeting (UNSW Sydney)

2014   Falster D. *Trait-based approaches in plant ecology – towards a theory of form & function.* Coral traits workshop (Sydney)

2011   Falster D. *A predictive theory of trait diversity.* Tempo & Mode of Plant Trait Evolution (NEScent / Macquarie University)

Falster D. *Mind the gap: size-structure & competition in vegetation models.* Challenges in Modelling Vegetation Function & Dynamics (UWS)

Falster D, Brännström Å, Westoby M & Dieckmann U. *Towards a general theory of plant trait diversity.* Next generation DGVMs, Macquarie University

2010	Falster D. *Towards a general theory of plant trait diversity.* Next generation DGVMs (Macquarie University)	
2009	Falster D, Brännström Å, Westoby M & Dieckmann U. *Evolution of growth strategy in size-structured plant communities.* Sydney Ecophysiology Group	
	Falster D. *Evolution of growth strategy in size-structured plant communities.* Approaches to modelling vegetation dynamics (University of Western Sydney)	
2008	Falster D. *Plant heights as an example of mixture coexistence & the problem of the fast solver.* Towards an evolutionary ecology vegetation model (Macquarie University)	

Student talks

2019	Pollo P. *When should male mate choice evolve?.* Australasian Evolution Society (UNSW)
	Indiarto D, Falster D, Nakagawa S, Cornwell W. *Predicting range limits from functional traits: assessing generality of response across two continents.* Ecological Society of Australia (TAS)
2018	Hinchliffe C. *Using mortality & growth rate relationships of larval fish to assess the role of frontal eddies as off-shore nursery grounds.* 42nd Annual Larval Fish Conference (Canada)
2014	Gray E, Eller A, Lehmann C, Falster D and Wright I. *Assimilation & allocation: explaining variation in plant growth rates using functional traits.* Ecological Society of Australia (Alice Springs)
2013	Lindh M, Zhang L, Falster D, Franklin O, Westoby M & Brännström Å. *Plant diversity & drought.* 7th Inter. Conf. on Functional-Structural Plant Models (Saariselkä, Finland)
	Díaz M, Falster D & Madin J. *title is cover hiding? Understanding Sarcophyton spp. population dynamics after a cyclone disturbance.* ACRIS (Sydney)

Symposia & Workshops	2019	(workshop) Invited speaker – *Australian Research Data Commons, Data Summit (Brisbane).*
		(workshop) Invited participant – *Forest Diversity & dynamics (Macquarie University, Sydney).*
		(workshop) Invited speaker – *Plant Traits Workshop (Royal Botanic Gardens, Sydney).*
	2018	(workshop) Invited speaker – *National traits workshop (Atlas of Living Australia, CSIRO).*
	2017	(workshop) Invited participant – *R open sci oz-unconference (Melbourne).*
		(workshop) Co-organised with Gallagher – *Collaborative trait research and data: a round table discussion about trait data analysis and its value for climate change adaptation planning.*
		(conference symposium) Co-organised (with Yen, Golding, Windecker) – *Quantitative Ecology Symposia (3 conference sessions over 2 days within the Ecological Society of Australia conference).*
		(conference symposium) Iniated and co-organised (with Yen, Golding, Windecker) – *Quantitative Ecology Showcase (mini-conference with 4 conference sessions over 2 days within the Ecological Society of Australia conference).*
		(conference symposium) Co-organised with Medlyn – *Tree mortality (Ecological Society of Australia conference).*
	2016	(conference symposium) Co-organised with Gallagher, Mokany – *A diversity of approaches: key advances in trait-based theory and methods (Ecological Society of Australia conference).*
	2015	(conference symposium) Invited speaker & panel member – *Modern Ecology: Challenges and Opportunities (Ecological Society of Australia conference).*
		(conference symposium) Invited speaker & panel member – *Data Driven Science (21st ACM SIGKDD conference on Knowledge Discovery & Data Mining).*
	2014	(workshop) Workshop facilitator – *Coral Traits Working Group (Macquarie University).*
	2013	(workshop) Invited keynote speaker – *Trait based approaches to Ocean Life (Danish Royal Academy of Sciences).*
		(workshop) Co-organised with Georges Kunstler – *How are competitive interactions influenced by traits – a global analysis? (Macquarie University).*
	2011	(workshop) Invited speaker & participant – *Next generation DGVMs (Macquarie University).*
		(workshop) Co-organised with Remko Duursma – *Challenges in modelling vegetation function and dynamics (University of Western Sydney).*
	2009	(workshop) Invited speaker & participant – *Approaches to modelling vegetation (University of Western Sydney).*

2008	(workshop) Co-organised meeting with Mark Westoby – *Towards an evolutionary ecology vegetation model (Macquarie University)*.
2005	(workshop) Invited participant – *Vegetation schemes in earth system models (ARC-NZ Research Network for Vegetation Function)*.
	(workshop) Invited participant – *Third-generation models of carbon assimilation and water expenditure (ARC-NZ Research Network for Vegetation Function)*.
	(workshop) Invited participant – *Vascular design: comparison of theory strands (ARC-NZ Research Network for Vegetation Function)*.

Media & Outreach

Videos

2019-02-24, Forecasting forests, Australian Academy of Science,
https://www.youtube.com/watch?v=m5zeDqwvF_c

2011-10-05, The evolution of forest diversity, Macquarie University Youtube channel,
http://www.youtube.com/watch?v=wa8Yx7g44ws

Articles

2020-07-01, Dr Daniel Falster, expert in understanding how forests work, ARDC Connect,
https://ardc.edu.au/news/dr-daniel-falster-expert-in-understanding-how-forests-work/

2017-06-02, Why not both? Rainforest diversity stems from two seemingly irreconcilable processes, by Jacqueline Hernandez, Mongabay, https://news.mongabay.com/2017/06/why-not-both-rainforest-diversity-stems-from-two-seemingly-irreconcilable-processes/

2015-12-25, A place in the sun for trees (French), by Sophie Bécherel, France Inter,
http://www.franceinter.fr/depeche-une-place-au-soleil-pour-les-arbres

2016-01-15, Landmark plant studies find new patterns of successful trait combinations and species competition, Future Earth Blog, https://futureearth.org/2016/01/15/landmark-plant-studies-find-new-patterns-of-successful-trait-combinations-and-species-competition/

2016-01-07, Trees employ similar strategies to outcompete their neighbors, Future Earth Blog,
http://www.futureearth.org/blog/2016-jan-15/landmark-plant-studies-find-new-patterns-successful-trait-combinations-and-species

2016-03-01, TERN active in ESA's first symposium on open data in ecology, Terrestrial Ecosystem Research Network: Newsletter,
http://www.tern.org.au/Newsletter-2016-Mar-ESA-Data-Workshop-pg31395.html

2008-07-11, Smaller families pose extinction risk, by D Osborne, ABC Science Online

2008-01-10, Small families and bib babies make evolutionary sense, Radio interview with A Shirley, ABC Canberra

2008-07-10, Small families and big babies make evolutionary sense, Radio interview with Ingrid Just, ABC QLD

Blog posts

FitzJohn RG, **Falster DS** (2016) Key technologies used to build the plant package (and maybe soon some other big simulation models in R). *https://methodsblog.wordpress.com/2016/02/23/plant/*.

Falster DS, FitzJohn RG, Duursma RA, Barneche DR (2016) The challenge of combining 176 x #otherpeoplesdata to create the Biomass And Allometry Database.
https://ropensci.org/blog/2015/06/03/baad/.

Falster DS (2015) For full details of the model see elsewhere.
http://danielfalster.com/blog/2015/08/19/SuppMat/.

Falster DS (2013) Why I want to write nice R code.
http://nicercode.github.io/blog/2013-04-05-why-nice-code/.

Falster DS (2013) Reflections on the software carpentry teaching module. *http://swcarpentry.github.io/training-course/2013/06/reflections-on-the-software-carpentry-teaching-module/*.

Falster DS (2013) Making a case for a fully open trait database.
http://danielfalster.com/blog/2013/08/23/making-a-case-for-a-fully-open-trait-database/.

Pearcy RW, Duursma RA, **Falster DS** (2011) Studying plant architecture with Y-plant and 3D digitising. *http://prometheuswiki.publish.csiro.au/tiki-index.php?page=Studying+plant+architecture+with+Y-plant+and+3D+digitising*.

Open source datasets

Zajitschek S, Zajitschek F, Bonduriansky R, Brooks RC, Cornwell W, **Falster D**, Lagiz L, Mason J, Senior A, Noble D, Nakagawa S (2020) **Raw Data for: Sex and Power: Sexual Dimorphism in Trait Variability and Its Eco-Evolutionary and Statistical Implications**. *{Zenodo}*. doi: 10.5281/zenodo.3759701

Falster D, Gallagher R, Wenk EH, Baxter C, Allen S, Lawson J, Wright I (2019) **AusTraits: A Curated Plant Trait Database for the Australian Flora**. *Zenodo*. doi: 10.5281/zenodo.3583418

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Heim RH, Wright IJ, Chang HC, Carnegie AJ, Pegg GS, Lancaster EK, **Falster DS**, Oldeland J (2018) **Detecting myrtle rust (Austropuccinia psidii) on lemon myrtle trees using spectral signatures and machine learning**. *Zenodo*. doi: 10.5281/zenodo.1142944

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Madin JS, Andreasen MH, Bridge T, CairnsX S, Connolly SR, Darling E, Diaz M, **Falster D**, Franklin EC, Gates RD, Hoogenboom MO, Huang D, Keith SA, Kosnik MA, Kuo C, Lovelock CE, Luiz O, Martinelli J, Mizerek T, Pandolfi JM, Pochon X, Putnam H, Roberts TE, Stat M, Baird AH (2016) **Data from: The Coral Trait Database: a curated database of trait information for coral species from the global oceans**. *Figshare*. doi: 10.6084/m9.figshare.2067414

Falster DS, Duursma RA, Ishihara MI, Barneche DR, FitzJohn RG, Vårhammar A, Aiba M, Ando M, Anten N, Aspinwall MJ, Baltzer JL, Baraloto C, Battaglia M, Battles JJ, Bond-Lamberty B, van M, Breugel J, Camac Y, Claveau L, Coll M, Dannoura S, Delagrange J, Domec F, Fatemi W, Feng V, Gargaglione Y, Goto A, Hagihara JS, Hall S, Hamilton D, Harja T, Hiura R, Holdaway LS, Hutley T, Ichie EJ, Jokela A, Kantola JWG, Kelly T, Kenzo D, King BD, Kloeppel T, Kohyama A, Komiyama J, Laclau CH, Lusk DA, Maguire G, le A, Maire L, Mäkelä J, Markesteijn K, Marshall I, McCulloh K, Miyata S, Mokany RW, Mori M, Myster SL, Nagano Y, Naidu AP, Nouvellon KL, O'Grady T, O'Hara N, Ohtsuka OO, Osada PL, Osunkoya AM, Peri L, Petritan A, Poorter C, Portsmuth J, Potvin D, Ransijn SC, Reid SD, Ribeiro R, Roberts A, Rodríguez I, Saldaña-Acosta K, Santa-Regina NG, Sasa SC, Selaya F, Sillett K, Sterck T, Takagi H, Tange D, Tanouchi T, Tissue H, Umehara MA, Utsugi F, Vadeboncoeur P, Valladares JR, Vanninen E, Wang R, Wenk F, Williams A, de T, Aquino Ximenes T, Yamaba RD, Yamada RA, Yamakura NA, Yanai NA, York NA (2015) **Data from: BAAD: a Biomass And Allometry Database for woody plants**. *Ecological Archives*: E096-128-D1. link: http://www.esapubs.org/archive/ecol/E096/128/ R package: baad.data code: github.com/dfalster/baad

Paul KI, Adams M, Applegate G, Attiwill P, Baker T, Barton C, Bastin G, Battaglia M, Bradford M, Bradstock R, Brand B, Brooksbank K, Cameron D, Carter J, England J, **Falster D**, Feller M, Forrester D, Green D, Groves T, Hamilton S, Hobbs T, Huxtable D, Jonson J, Larmour J, Lewis T, McArthur G, Mendham D, Montagu K, O'Brien N, O'Grady A, Peck A, Pinkard E, Rance S, Ritson P, Roxburgh S, Snowdon P, Sochacki S, Specht A, Spencer B, Sudmeyer R, Theiveyanathan S, Turner J, Waterworth R, Wenk E, Wildy D, Williams R, Zerihun A (2015) **Australian individual tree biomass library, version 1.0**. *AEKOS*. doi: 10.4227/05/57354015127B8

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Falster DS (2005) **Data from: Alternative height strategies among 45 dicot rain forest species from tropical Queensland, Australia**. *Github*. link: https://github.com/dfalster/Falster_2005_JEcol_data

Falster DS (2005) **Data from: Tradeoffs between height growth rate, stem persistence and maximum height among plant species in a post-fire succession**. *Github.* link: https://github.com/dfalster/Falster_2005_Oikos_data

Moles AT, **Falster DS**, Leishman M, Westoby M (2004) **Data from: Small-seeded plants produce more seeds per square metre of canopy per year, but not per individual per lifetime**. *Journal of Ecology Supplementary material.* link: http://www.blackwellpublishing.com/products/journals/suppmat/JEC/JEC880/JEC880sm.htm

Falster DS, Westoby M (2003) **Data from: Leaf size and angle vary widely across species: what consequences for light interception?**. *New Phytologist*: 158. doi: 10.1046/j.1469-8137.2003.00765.x

Open source software	datastorr	A workflow and package for delivering successive versions of 'evolving data' directly into R, https://github.com/ropenscilabs/datastorr – Co-developed with R FitzJohn, W Cornwell, M Pennell
	plant	A package for modelling forest trait ecology and evolution, https://github.com/traitecoevo/plant – Project lead, co-developed with R FitJOhn, R Schouten, J Wilshire
	drake	An R-focused pipeline toolkit for reproducibility and high-performance computing, https://github.com/ropensci/drake – Assisted lead developer with early concepts
	baad.data	Access to the Biomass And Allometry Database, https://github.com/traitecoevo/baad.data – Co-developed with R FitzJohn
	stateliner	An R interface to the stateline MCMC engine for R via docker, https://github.com/traitecoevo/stateliner – Co-developed with R FitzJohn
	rrqueue	Scalable distributed job queues with R and Redis, https://github.com/traitecoevo/rrqueue – Co-developed with R FitzJohn
	experimentr	Control large computational experiments on multiprocessor machines or on HPC infrastructure, https://github.com/traitecoevo/experimentr – Co-developed with R FitzJohn
	smatr v3	Bivariate line-fitting methods for allometry (with David Warton, Remko Duursma), http://cran.r-project.org/web/packages/smatr/ – Co-developed with Duursma, Warton (cited in over 750 publications)
	smatr v2	Bivariate line-fitting methods for allometry, http://www.bio.mq.edu.au/ecology/SMATR – Co-developed with Warton, Wright (cited in over 500 publications)

Articles   **Preprints**

Falster DS, Gallagher R, Wenk E, Wright I, Indiarto D, Baxter C, Andrew SC, Lawson J, Allen S, Fuchs A, Adams MA, Ahrens CW, Alfonzetti M, Angevin T, Atkin OK, Auld T, Baker A, Bean A, Blackman CJ, Bloomfield K, Bowman D, Bragg J, Brodribb TJ, Buckton G, Burrows G, Caldwell E, Camac J, Carpenter R, Catford JA, Cawthray GR, Cernusak LA, Chandler G, Chapman AR, Cheal D, Cheesman AW, Chen S, Choat B, Clinton B, Clode P, Coleman H, Cornwell WK, Cosgrove M, Crisp M, Cross E, Crous KY, Cunningham S, Curtis E, Daws MI, DeGabriel JL, Denton MD, Dong N, Duan H, Duncan DH, Duncan RP, Duretto M, Dwyer JM, Edwards C, Esperon-Rodriguez M, Evans JR, Everingham SE, Firn J, Fonseca CR, French BJ, Frood D, Funk JL, Geange SR, Ghannoum O, Gleason SM, Gosper CR, Gray E, Groom PK, Gross C, Guerin G, Guja L, Hahs AK, Harrison MT, Hayes PE, Henery M, Hochuli D, Howell J, Huang G, Hughes L, Huisman J, Ilic J, Jagdish A, Jin D, Jordan G, Jurado E, Kasel S, Kellermann J, Kohout M, Kooyman RM, Kotowska MM, Lai HR, Laliberté E, Lambers H, Lamont BB, Lanfear R, van F, Langevelde DC, Laughlin B, Laugier-Kitchener CER, Lehmann A, Leigh MR, Leishman T, Lenz B, Lepschi JD, Lewis F, Lim U, Liu J, Lord CH, Lusk C, Macinnis-Ng H, McPherson A, Manea M, Mayfield JK, McCarthy T, Meers M, van der D, Merwe P, Metcalfe K, Milberg AT, Mokany BD, Moles N, Moore JW, Moore W, Morgan A, Morris S, Muir Á, Munroe D, Nicholson AB, Nicolle Ü, Nicotra T, Niinemets A, North OS, O'Reilly-Nugent B, O'Sullivan Y, Oberle MKJ, Onoda CP, Ooi G, Osborne B, Paczkowska CG, Pekin C, Pereira M, Pickering LJ, Pickup P, Pollock JR, Poot SA, Powell IC, Power L, Prentice SM, Prior J, Prober V, Read AE, Reynolds B, Richards ML, Richardson JA, Roderick M, Rosell B, Rossetto PD, Rye MA, Rymer G, Sams S, Sanson E, Schmidt K, Schulze S, Sendall B, Sinclair R, Smith F, Smith B, Soper R, Sparrow TL, Standish G, Staples F, Taseski DT, Thomas MG, Tissue DYP, Tjoelker K, Tng NC, Tomlinson E, Turner S, Veneklaas P, Venn C, Vesk MS, Vlasveld C, Vorontsova LK, Warren M, Weerasinghe M, Westoby N, White J, Williams PG, Wills C, Wilson AE, Yates K, Zanne NA, Ziemiñska NA (2021)

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Wenk EH, Abramowicz K, Westoby M, **Falster DS** (2017) **Coordinated shifts in allocation among reproductive tissues across 14 coexisting plant species**. *bioRxiv*: 141473. doi: 10.1101/141473 code: github Times cited: 2

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Falster DS, Kunstler G, FitzJohn RG, Westoby M (2021) **Emergent shapes of trait-based competition functions from resource-based models: A Gaussian is not normal in plant communities**. *The American Naturalist*: 000-000. doi: 10.1086/714868

Heagney E, **Falster D**, Kovač M (2021) **Land clearing in south-eastern Australia: Drivers, policy effects and implications for the future**. *Land Use Policy* 102: 105243. doi: 10.1016/j.landusepol.2020.105243

Hinchliffe C, Smith JA, Everett JD, **Falster DS**, Lara-Lopez A, Miskiewicz AG, Richardson AJ, Schilling HT, Suthers IM (2021) **Modelling the distribution of larval fish in a western boundary current using a multi-voyage database**. *Reviews in Fish Biology and Fisheries*. doi: 10.1007/s11160-021-09647-x

Kingsford RT, Bino G, Finlayson CM, **Falster D**, Fitzsimons JA, Gawlik DE, Murray NJ, Grillas P, Gardner RC, Regan TJ, Roux DJ, Thomas RF (2021) **Ramsar Wetlands of international importance − improving conservation outcomes**. *Frontiers in Environmental Science*: 9. doi: 10.3389/fenvs.2021.643367

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