Hao Ran LAI

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Education

2015–2018 Ph.D., Ecology and Evolutionary Biology, National University of Singapore. Advisors: Michiel van Breugel & Hugh Tan Tiang Wah. Thesis: *Functional ecology of tropical secondary forests*

2009–2012 B.Sc. (Hons.) Ecology, The University of Queensland. Advisor: Margaret M. Mayfield. Thesis: *Functional recovery following logging in subtropical forests*

Employment

2019–current Research Fellow, Centre for Integrative Ecology, School of Biological Sciences, University of Canterbury, New Zealand
— Higher-order species interactions and tree growth

2019 Visiting Research Fellow, Centre for Urban Greenery and Ecology, National Parks Board, Singapore
— Tree diameter growth in the urban areas of Singapore

2018–2019 Research assistant, Department of Biological Sciences, National University of Singapore, Singapore
— Data analysis and plant community survey in the Nee Soon Freshwater Swamp forest, Singapore

2015–2018 Teaching assistant, National University of Singapore, Singapore
— Biostatistics, Ecology, Field Studies, Plant Biology, and Horticulture

2015 Biology Olympiad trainer, National Junior College, Singapore

2012–2014 Research assistant, Mayfield Plant Ecology Lab, The University of Queensland, Australia
— Survey and analyses of natural plant communities in Queensland subtropical forests and Western Australia grassland

2012–2014 Research officer, Centre for Mined Land Rehabilitation, The University of Queensland, Australia
— Map and identify threats of coal mining to an endangered plant species

2012–2014 Research assistant, Buckley Ecology Lab, The University of Queensland, Australia

2012–2014 Course Tutor, The University of Queensland, Australia
— Biostatistics, Ecology, and Plant Biology

Publications

Journal Articles

Lai, H. R., Chong, K. Y., Yee, A. T. K., Mayfield, M. M., Stouffer, D. B. (in press). Non-additive biotic interactions improve predictions of tropical tree growth and impact community size structure. *Ecology*.

Falster, A. D., Gallagher, R., Wenk, E., Wright, I., Indiarto, D., Andrew, S. C., ..., Lai, H. R., ..., Kasia Ziemińska. (in press). AusTraits – a curated plant trait database for the Australian flora. *Nature Scientific Data*, 1–62.

Lai, H. R., M., Craven D., Hall, J.S., Hui, F.K.C., van Breugel, M. (2021) Successional syndromes of saplings in tropical secondary forests emerge from environment-dependent trait–demography relationships. *Ecology Letters*, 24(9), 1776–1787.

Lai, H. R., Tan C. S. Y., Neo L., Kee C. Y., Yee A. T. K., Tan H. T. W., Chong K. Y. (2021) Decoupled responses of native and exotic tree diversities to distance from old-growth forest and soil phosphorous in novel secondary forests. *Applied Vegetation Science*, 24, e12548.

Song, X. P., Lai, H. R., Wijedasa, L. S., Tan, P. Y., Edwards, P. J., Richards, D. R. (2020). Height–diameter allometry for the management of city trees in the tropics. *Environmental Research Letters*, 15(11), 114017.

Lai, H. R., Chong, K. Y., Yee, A. T. K., Tan, H. T. W., van. Breugel, M. (2020). Functional traits that moderate tropical tree recruitment during post-windstorm secondary succession. *Journal of Ecology*, 108, 1322–1333.

Chiam, Z., Song, X. P., Lai, H. R., Tan, H. T. W. (2019). Particulate matter mitigation via plants: Understanding complex relationships with leaf traits. *Science of the Total Environment*, 688, 398–408.

Yee, A. T. K., Lai, H. R., Chong, K. Y., Neo, L., Koh, C. Y., Tan, S. Y., ... Tan, H. T. W. (2019). Short-term responses in a secondary tropical forest after a severe windstorm event. *Journal of Vegetation Science*, 30, 720–731.

van Breugel, M., Craven D., Lai, H. R, Baillon M., Turner, B.L., Hall, J.S. (2019). Soil nutrients and dispersal limitation shape compositional variation in secondary tropical forests across multiple scales. *Journal of Ecology*, 107, 566–581.

Wainwright, C. E., HilleRisLambers, J., Lai, H. R., Loy, X., Mayfield, M. M. (2019). Distinct responses of niche and fitness differences to water availability underlie variable coexistence outcomes in semi-arid annual plant communities. *Journal of Ecology*, 107, 293–306.

Lam, W.N., Lai, H.R., Lee. C., Tan, H.T.W. (2018) Evidence for pitcher trait-mediated coexistence between sympatric *Nepenthes* pitcher plant species across geographical scales. *Plant Ecology and Diversity*, 11(3), 283–294.

Lai, H.R., Hall, J.S., Batterman, S.A., Turner, B.L., van Breugel, M. (2018). Nitrogen fixer abundance has no effect on biomass recovery during tropical secondary forest succession. *Journal of Ecology*, 106, 1415–1427.

Bimler, M.D., Stouffer, D.B., Lai, H.R., Mayfield, M.M. (2018). Accurate predictions of coexistence in natural systems require the inclusion of facilitative interactions and environmental dependency. *Journal of Ecology*, 106(5), 1839–1852. *Special Feature – Biotic controls of plant coexistence.*

Wainwright, C.E., Staples, T.L., Charles, L.S., Flanagan, T.C., Lai, H.R., Loy, X., Reynolds, V.A., Mayfield, M.M. (2018). Links between community ecology theory and ecological restoration are on the rise. *Journal of Applied Ecology*, 55, 570–581.

Sams, M.A., Lai, H.R., Bonser, S.P., Vesk, P.A., Kooyman, R.M., Metcalfe, D.J., Morgan, J.W., Mayfield, M.M. (2017). Landscape context explains changes in the functional diversity of regenerating forests better than climate or species richness. *Global Ecology and Biogeography*, 26, 1165–1176.

Lai, H.R., Hall, J.S., Turner, B.L., van Breugel, M. (2017). Liana effects on biomass dynamics strengthen during secondary forest succession. *Ecology*, 98, 1062–1070.

Lai, H.R., Mayfield, M.M., Gay-des-combes, J.M., Spiegelberger, T., Dwyer, J.M. (2015). Distinct invasion strategies operating within a natural annual plant system. *Ecology Letters*, 18, 336–346.

Software

Lai, H. R., Chong K. Y., Yee A. T. K. (2020) `novelforestSG`: Data and model for Lai, Chong et al. (2020) *Appl. Veg. Sci.* R package version 0.9.0.

Song, X. P., Lai, H. R. (2020) `allometree`: Allometric Scaling of Urban Trees. R package version 0.1.

Conferences & Presentations

2020	School of Biological Sciences Seminar. University of Canterbury, New Zealand.
2020	International Statistical Ecology Conference (ISEC). virtual.
2019	Centre for Urban Greenery and Ecology, National Parks Board, Singapore.
2018	Association of Tropical Biology and Conservation (ATBC). Kuching, Malaysia.
2016	Conservation Asia. Singapore.
2015	20th Biological Science Graduate Congress. Bangkok, Thailand.

Awards & Scholarships

2019	International Society for Plant Molecular Biology Medal for most outstanding thesis
2019	CUGE Visiting Research Fellowship, National Parks Board Singapore
2017 & 2018	Teaching Assistant Award, National University of Singapore
2016	City Developments Limited (CDL) Urban Ecology and Conservation Scholarship
2013	University Medal, University of Queensland
2011	Summer Research Scholarship, University of Queensland
2010	D.A. Herbert Prize in Botany & F.A. Perkins Prize in Entomology, University of Queensland

Services & Outreach

2020	`RMarkdown` tutorial, University of Canterbury, New Zealand
2017	Science Research Programme, Hwa Chong Institution, Singapore
2016	Festival of Biodiversity, Singapore Botanic Gardens
2012–2014	Volunteer, National Parks Association of Queensland Inc. (NPAQ)
Ongoing	Peer review for *Journal of Ecology*, *Functional Ecology*, *Ecology*, *Methods in Ecology and Evolution*, *Ecological Applications*, *Ecography*, *Biodiversity and Conservation*, *Biological Invasions*, *Science of the Total Environment*, *Journal of Vegetation Science*

Languages & Qualifications

English (professional working proficiency)

Mandarin (mother tongue) and Cantonese (regional dialect)

Malay (national language)

Malaysian and Singaporean driver's licenses

Relevant skills

- `R` statistical and programming language
- Bayesian inference
- Version control (GitHub)
- Plant survey and identification
- Geographic information system

Professional references

A/P Daniel B. Stouffer
Current supervisor
Associate Professor, University of Canterbury, New Zealand
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A/P Michiel van Bruegel
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A/P Hugh Tiang Wah Tan
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