

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

- 2024–present Researcher, South East Asia Rainforest Research Partnership (SEARRP), Malaysia
— Virtual rainforest project
- 2022–present Research Fellow, Bioprotection Aotearoa, School of Biological Sciences, University of Canterbury, New Zealand
— Transferability of trait-based species distribution models
— Evo-ecological trade-offs in crop–pest systems
- 2019–2021 Research Fellow, Centre for Integrative Ecology, School of Biological Sciences, University of Canterbury, New Zealand
— Species interactions and tree growth in tropical and temperate forests
- 2019 Visiting Research Fellow, Centre for Urban Greenery and Ecology, National Parks Board, Singapore
— Tree diameter growth in urban streetscapes
- 2018–2019 Research assistant, Department of Biological Sciences, National University of Singapore, Singapore
— Data analysis and freshwater swamp forest survey
- 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
— Plant community dynamics in subtropical forests and annual 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., Bellingham, P., McCarthy, J., Richardson, S., Wisser, S., Stouffer, D. (2024). Detecting non-additive biotic interactions and assessing their biological relevance among temperate rainforest trees. *The American Naturalist*, 204(2).

- Martins, L. P., Garcia-Callejas, D., Lai, H. R., Wootton, K. L., Tylianakis, J. M. (2024). The propagation of disturbances in ecological networks. *Trends in Ecology & Evolution*, 39(6), 558–570.
- Lai, H. R., Chong, K. Y., Thiam, A., Yee, K. (2022). Ten years after: what we learned from the Mandai storm forest. *Nature in Singapore*, Supplement(e2022121), 207–218.
- Hall, J. S., Plisinski, J. S., Mladinich, S. K., van Breugel, M., Lai, H. R., Asner, G. P., Walker, K., Thompson, J. R. (2022). Deforestation scenarios show the importance of secondary forest for meeting Panama's carbon goals. *Landscape Ecology*, 37(3), 673–694.
- Lai, H. R., Chong, K. Y., Yee, A. T. K., Mayfield, M. M., Stouffer, D. B. (2021). Non-additive biotic interactions improve predictions of tropical tree growth and impact community size structure. *Ecology*, 103(2), e03588.
- Lam, W. N., Chan, P. J., Ting, Y. Y., ..., Lai, H. R., ..., Chong, K. Y. (2021). Habitat adaptation mediates the influence of leaf traits on canopy productivity: evidence from a tropical freshwater swamp forest. *Ecosystems*, 25(5), 1006–1019.
- Falster, A. D., Gallagher, R., Wenk, E., Wright, I., Indiarto, D., Andrew, S. C., ..., Lai, H. R., ..., Kasia Ziemińska. (2020). AusTraits – a curated plant trait database for the Australian flora. *Nature Scientific Data*, 8(1), 254.
- 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 2.0.

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

Conferences & Presentations

- 2022 sUCCESS secondary forest workshop. Leipzig, Germany.
- 2022 Association of Tropical Biology and Conservation (ATBC). Cartagena, Colombia.
- 2020 International Statistical Ecology Conference (ISEC). virtual.
- 2018 Association of Tropical Biology and Conservation (ATBC). Kuching, Malaysia.
- 2016 Conservation Asia. Singapore.
- 2015 20th Biological Science Graduate Congress. Bangkok, Thailand.

Awards & Scholarships

- 2022–2025 Marsden Fast Start Fund, Royal Society Te Apārangi, New Zealand
- 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

Supervision & Mentoring

- 2024 Pin Jia Chan (PhD), Sophie O'Brien (PhD), Gabrielle Koerich (PhD), Daniel Hernández (PhD), Rose Foster-Dyer (PhD), Jack Anderson (MSc.), Tim Logan (MSc.)
- 2023 Laura van Ginkel (MSc.), Rory Lennox (MSc.)
- 2017 Zhong Yu Chiam (BSc. Hons)
- 2016 Melissa Wong Qi Yun (BSc. Hons), Amanda Ng Wei Ling (BSc. Hons), Pin Jia Chan (Undergraduate programme), Zhong Yu Chiam (Undergraduate programme), Srishti Arora (Undergraduate programme)
- 2015 Germaine Tan Su Yin (BSc. Hons)

Services & Outreach

Ongoing	Peer review for <i>Science</i> , <i>Journal of Ecology</i> , <i>Functional Ecology</i> , <i>Ecology</i> , <i>Methods in Ecology and Evolution</i> , <i>Ecological Applications</i> , <i>Ecography</i> , <i>Biodiversity and Conservation</i> , <i>Biological Invasions</i> , <i>Science of the Total Environment</i> , <i>Journal of Vegetation Science</i> , <i>Global Ecology and Biogeography</i> , <i>Global Change Biology</i> etc.
2020	RMarkdown tutorial, University of Canterbury, New Zealand
2017	Science Research Programme, Hwa Chong Institution, Singapore
2016	Festival of Biodiversity, Singapore Botanic Gardens

Languages

English (professional working proficiency); Mandarin (mother tongue); Cantonese (regional dialect); Malay (national language)

Relevant skills

R statistical and programming language, Bayesian inference, version control (GitHub), plant survey and identification

Professional references

Jason Tylianakis (current post-doc supervisor)
Professor, University of Canterbury, New Zealand
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Jonathan Tonkin (current post-doc supervisor)
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Hugh Tiang Wah Tan (former PhD co-supervisor)
Honorary Fellow, National University of Singapore
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