

Tsang Pak Nok Toby 曾栢諾

Email: tpaknok@gmail.com Mobile: +1 (437) 989-0859

Website: <https://tobypntsang.wordpress.com/> Github: <https://github.com/tpaknok>

Department of Biological Sciences, University of Toronto Scarborough
1265 Military Trail, Toronto, Ontario M1C 1A4

Education

- 2013 – 2018 PhD (Ecology), The University of Hong Kong
Supervisors: Dr. Timothy Bonebrake, Dr. Benoit Guénard
Thesis: Community assembly in human-modified habitats
- 2009 – 2012 Bachelor of Science, The University of Hong Kong
Major in Ecology & Biodiversity and Minor in Geography
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Employment

- 2024 Freelance Statistical Analyst, isoFoodtrace
Assessing stable isotope signals of beef and cotton samples from different countries and management to examine their quality
- 2022 – Present Postdoctoral Researcher, University of Toronto Scarborough (Supervisor: Prof. Marc W. Cadotte)
- 2019 – 2022 Postdoctoral Researcher, The University of Hong Kong (Supervisors: Prof. Timothy C. Bonebrake, Dr. Lauren C. Ponisio)
- 2012 – 2013 Project Officer, Lung Fu Shan Environmental Education Center
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Publications (*Supervised student; #Co-first author)

Peer-reviewed paper – Nb: 17 | Total citations (per [Google Scholar](#)): 157 | h-index: 7

2023 **Tsang, T. P. N.**, T. C. Bonebrake, L. C. Ponisio, M. W. Cadotte. Controlling for the effects of environmental availability when testing how the environment determines community compositional uniqueness. *Methods in Ecology & Evolution*. [\[link to paper\]](#) [\[link to Github\]](#)

Tsang, T. P. N., L. C. Ponisio, T. C. Bonebrake. Increasing synchrony opposes stabilizing effects of species richness on terrestrial communities. *Diversity and Distributions* 29: 849-861. [\[link to paper\]](#)

Kameni, N. M. M., Landry-Yuan, F., Gonwouo, N. L., Tapondjou, N. W. P., Allen, K. E., Fomena, A., **T. P. N. Tsang**. Range contractions and reduced body mass predicted for endemic skinks of the Cameroon Volcanic Line with future warming. *Diversity and Distributions* 29: 1052-1063. [\[link to paper\]](#)

Lee, R. H., Kwong, I. H. Y., **T. P. N. Tsang**, M. K. L. Wong, B. Guénard. Remotely sensed

environmental data as ecological proxies for ground-dwelling ant diversity along a subtropical forest succession gradient. *Journal of Ecology* 111: 1428-1142. [\[link to paper\]](#)

2022 Lim, V. C., K. W. Sing, K. Y. Chong, N. Jaturas, H. Dong, P. S. Lee, N. T. Tao, D. T. Le, T. C. Bonebrake, **T. P. N. Tsang**, L. Chu, G. -J. Brandon-Mong, W. -L. Kong, M. Soga, J. -J. Wilson. Familiarity with perceptions of and attitudes toward butterflies of urban park users in megacities across East and Southeast Asia. *Royal Society Open Science* 9: 220161. [\[link to paper\]](#)

Leong, C. M., **T. P. N. Tsang**, B. Guénard. Testing the reliability and ecological implications of ramping rates in the measurement of Critical Thermal maximum. *PloS One* 17: e0265361. [\[link to paper\]](#)

Dufour, P. C., **T. P. N. Tsang**, S. Clusella-Trullas, T. C. Bonebrake. No consistent effect of daytime versus night-time measurement of thermal tolerance in nocturnal and diurnal lizards. *Conservation Physiology* 10: coac020. [\[link to paper\]](#)

2021 Lo, F. H. Y.^{**}, **T. P. N. Tsang**[#], T. C. Bonebrake. Behavior-partitioned diversity reveals differential habitat values of gardens to butterfly communities. *Ecological Applications* 31: e02331. [\[link to paper\]](#) [\[link to video \(in Cantonese only\)\]](#)

Wong, M. K. L.[#], **T. P. N. Tsang**[#], O. T. Lewis, B. Guénard. Trait-similarity and trait-hierarchy jointly determine fine-scale spatial associations of resident and invasive ant species. *Ecography* 44: 589-601. [\[link to paper\]](#)

Landry-Yuan, F.[#], S. Ito[#], **T. P. N. Tsang**, T. Kuriyama, K. Yamazaki, T. C. Bonebrake, M. Hasegawa. Predator presence and recent climatic warming raise body temperatures of island lizards. *Ecology Letters* 24: 533-542. [\[link to paper\]](#)

2020 **Tsang, T. P. N.**, B. Guénard, T. C. Bonebrake. Omnivorous ants are less carnivorous and more protein-limited in exotic plantations. *Journal of Animal Ecology* 89: 1941-1951. [\[link to paper\]](#)

Goldman, A. E., T. C. Bonebrake, H. M. Griffiths, **T. P. N. Tsang**, P. Eggleton, T. A. Evans, L. Gibson, C. L. Parr, L. A. Ashton. Drought and presence of ants can influence hemiptera in tropical leaf litter. *Biotropica* 52: 221-229. [\[link to paper\]](#)

Dudgeon, D., L. C. Y. Ng, **T. P. N. Tsang**. Shifts in aquatic insect composition in a tropical forest stream after three decades of climatic warming. *Global Change Biology* 26: 6399-6412. [\[link to paper\]](#)

Cybulski, J. D., S. M. Husa, N. N. Duprey, B. L. Mamo, **T. P. N. Tsang**, M. Yasuhara, J. Y. Xie, J.-W. Qiu, Y. Yokoyama, D. M. Baker. Coral reef diversity losses in China's Greater Bay Area were driven by regional stressors. *Science Advances* 40: eabb1046. [\[link to paper\]](#)

- 2019 **Tsang, T. P. N.**, E. E. Dyer, T. C. Bonebrake. Alien species richness is unbounded in all but the most urbanized bird communities. *Ecography* 42: 1426-1435. [\[link to paper\]](#)
- 2017 **Tsang, T. P. N.**, T. C. Bonebrake. Contrasting roles of environmental and spatial processes for common and rare urban butterfly species compositions. *Landscape Ecology* 32: 47-57. [\[link to paper\]](#) [\[link to news article\]](#) [\[link to video \(in Cantonese only\)\]](#)
- 2016 Bonebrake, T. C., E. J. Pickett, **T. P. N. Tsang**, C. Y. Tak, M. Q. Vu, L. V. Vu. Warming threat compounds habitat degradation impacts on a tropical butterfly community in Vietnam. *Global Ecology and Conservation* 8: 203-211. [\[link to paper\]](#)

In review / in revision / Preprint

Tsang, T. P. N., ... and 146 co-authors. Land use change reduces the taxonomic and phylogenetic diversity of bees. **Submitted to PNAS**. [Available on request]

Tsang, T. P. N., M. K. L. Wong, M. W., Cadotte, E. P. Economo, B. Guénard. Climate change can exacerbate ant invasion impacts by unleashing indoor populations into outdoor environments. **Preprint**. [\[link to preprint\]](#)

Chan, W. S. M., **T. P. N. Tsang**, C. Dingle, R. Early, C. Sorte, T. C. Bonebrake. Microhabitat coverage but not habitat heterogeneity influences avian species composition in Hong Kong urban parks. **Urban Forestry & Urban Greening**

MacIvor, J. S., B. V. Iannone III, M. F. J. Aronson, C. R. Firkowski, M. -J. Fortin, M. Gaertner, C. Hui, C. -M. Leong, E. S. Minor, A. S. Mori, D. K. Ngwenya, M. A. Nuñez, A. Pauchard, L. J. Potgieter, N. Sookhan, L. Trotta, **T. P. N. Tsang**, G. Xie, M. W. Cardotte. A replicable framework for assessing invasion risk of urban green spaces. **NeoBiota**

Dufour, P. C., **T. P. N. Tsang**, N. Alston, T. De Vos, S. Clusella-Trullas, T. C. Bonebrake. High resolution climate data reveals increasing risk of warming-driven activity restriction or diurnal and nocturnal lizards. **Ecology and Evolution**

Bonebrake, T. C., **T. P. N. Tsang**, ... and 14 co-authors. Tropical cities as windows into the ecosystems of our present and future. **Biotropica**

Potgieter, L. J[#], D. Li[#], ... and 13 co-authors including **T. P. N. Tsang**. Cities shape the diversity and spread of non-native species. **Annual Review of Ecology, Evolution, and Systematics**.

Non peer-reviewed

- 2020 Whitfort, A. S., F. M. Woodhouse, S. Ho, A. Marwah, **T. P. N. Tsang**. 2020. A Comparative Evaluation of Hong Kong's Legislative Powers to Regulate Trade in Endangered Wild Animals. [\[link\]](#)

- 2018 **Tsang, T. P. N.**, S. Xing, T. C. Bonebrake. 2018. Climate change vulnerability of Southeast Asian butterflies – a modeling and protected area perspective (Available on request)
- 2015 **Tsang, T. P. N.** Outliers and influential observations – what is the difference and their effects on regression model?. [\[link\]](#)
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Grants & Awards

Total funds raised: 458,722 USD

- 2022 Travel Award, Centre for Environmental Research in the Anthropocene, University of Toronto (729 USD)
- UTSC Postdoctoral Fellowship Program: Effects of land-use changes in facilitating plant invasion globally (65,621 USD)
- Contributor of Hong Kong General Research Fund proposal: Climate, habitat, and host plant drivers in the tropicalization of a subtropical butterfly community (122,014 USD) (PI: Prof. Timothy C. Bonebrake)
- 2020 Leading author of National Natural Science Foundation of China proposal: Mechanistic modelling and macrophysiological insights into tropical climate change impacts (172,403 USD) (PI: Prof. Timothy C. Bonebrake)
- 2019 Leading author of Hong Kong General Research Fund proposal: Global consequences of land-use intensification for bee diversity (84,803 USD) (PI: Prof. Timothy C. Bonebrake)
- Leading author of HKU Seed fund for basic research proposal: Global consequences of urbanization for bee beta diversity (6,102 USD) (PI: Prof. Timothy C. Bonebrake)
- 2018 Leading author of HKU Seed fund for basic research proposal: Invasion resistance in native urban bird communities: dietary breadth and food web complexity (6,102 USD) (PI: Prof. Timothy C. Bonebrake)
- 2017 Best presenter of the month, New College, The University of Hong Kong
- 2012 First-in-the-Family Education Fund (948 USD)
- Dean's Honor List 2012
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Teaching Experience

Teaching Assistant

- 2013– 2017 Ecology and Evolution Field Course

2014, 2016 Conservation Biology

2015-2016, Environmental Data Analysis
2022

2015 Insect Ecology

Guest Lecturer

2023 Analyzing datasets with low replication (Biological Data Jam, 15 participants)

2022 Generalized linear models (UG course Environmental Data Analysis, 60 students)

2018-2022 Using R-package vegan for multivariate analysis (UG course Environmental Data Analysis, 60 students)

2018, 2020 Introduction of using R for data analysis (UG course Biostatistics, 200 students)

2019 Phylogenetic analyses in R (Phylogenetic analyses workshop, 10 students)

2015 Introduction of Lepidoptera (UG course Insect Ecology, 25 students)

Instructor

2019 Advanced Quantitative Skills and Data Analysis in Ecology & Biodiversity Workshop (20 students)

2017 Using R-package vegan for multivariate analysis (University Consortium on Aquatic Sciences to Graduate students, 40 participants)

Mentorship

MSc / MPhil

2024- Ng Sze On, MPhil, Lingnan University (Co-supervised with Dr. Roger Lee Ho)

Current Tentative thesis title : Wise use of wetlands – understand novel community assembly processes across a human-modified landscape

2019-2020 Fiona Lo Hoi Yan, MSc, The University of Hong Kong

Thesis title: Abundance, richness, and behaviour of Hong Kong butterflies in butterfly gardens [\[link to video \(in Cantonese only\)\]](#)

Undergraduate

2022 Chenjie Xia, University of Toronto Scarborough

Thesis title: The effect of urbanization on understory plant community diversity and function in restoration sites

2020-2021 Ka Hei Anson Yip, The University of Hong Kong
Thesis title: Resistance surface optimization uncovers landscape preference and dispersal patterns of butterflies in a highly urbanized landscape [[link to video \(in Cantonese only\)](#)]

Academic Services

Journal reviewer for Asian Myrmecology, Urban Ecosystems, Landscape Ecology, Biological Invasion, PLoS ONE, Journal of Environmental Management, Global Ecology and Biogeography, Insect Science, Journal of Insect Conservation, Journal of Animal Ecology, Frontiers in Ecology & Evolution, Urban Forestry & Urban Greening

Presentation judge, 1st Annual Ecology & Biodiversity Research Symposium for The University of Hong Kong.

Presentation judge, BIOB90 Poster Judging, University of Toronto Scarborough

Presentations

2024 **Tsang, T. P. N.**, M, K. L. Wong, M. W. Cadotte, E. Economo, B. Guénard. Climate change can exacerbate ant invasion impacts by unleashing indoor populations into outdoor environments. 1st International Invasive Species and Climate Change Conference. (Invited virtual presentation).

2022 **Tsang, T. P. N.**, and 126 co-authors. Urbanization reduces taxonomic, functional, and phylogenetic diversity in bee communities. 2022 Protecting Pollinators in Urban Landscapes Conference. (Invited oral presentation).

Tsang, T. P. N. Using trait and niche data to assess ecological impacts of alien species. ESA 2022, Montreal, Canada. (Invited oral presentation)

Tsang, T. P. N., L. C. Ponisio, T. C. Bonebrake. Asynchrony outweighs population stability and diversity in stabilizing terrestrial communities. International Biogeography Society 10th Biennial Conference. (Oral presentation)

2020 **Tsang, T. P. N.**, L. C. Ponisio, T. C. Bonebrake. Semi-natural habitats increase taxonomic and functional diversity of bees in agricultural landscapes globally. ESA 2020. (Oral presentation)

2019 **Tsang, T. P. N.**, S. Xing, T. C. Bonebrake. Climate change increases the spatial mismatch between protected areas and butterfly diversity hotspots in Southeast Asia. 5th Asian Lepidoptera Conservation Symposium, Hong Kong. (Oral presentation)

2017 **Tsang, T. P. N.**, B. Guénard, T. C. Bonebrake. Altered nutrient limitation in subtropical ant communities inhabiting abandoned exotic plantations relative to secondary forests. ESA 2017, Portland, USA. (Oral presentation)

Tsang, T. P. N., B. Guénard, T. C. Bonebrake. Altered nutrient limitation in subtropical ant communities inhabiting abandoned exotic plantations relative to secondary forests. 2nd Graduate Consortium of Ecology and Conservation, Hong Kong, China. (Oral presentation)

Tsang, T. P. N., T. C. Bonebrake. Urbanization alters bee assemblages through species turnover rather than species loss. International Botanical Congress 2017, Shenzhen, China. (Oral presentation)

2016 **Tsang, T. P. N.**, T. C. Bonebrake. Contrasting roles of environmental and spatial processes for common and rare urban butterfly species compositions. Conservation Asia 2016, Singapore. (Oral presentation)

2015 **Tsang, T. P. N.**, T. C. Bonebrake. Contrasting roles of environmental and spatial processes for common and rare urban butterfly species compositions. 1st Graduate Consortium of Ecology and Conservation, Guangzhou, China. (Oral presentation)

2014 **Tsang, T. P. N.**, T. C. Bonebrake. What are the mechanisms governing species-distribution patterns in Hong Kong urban parks? International Conference on the Biology of Butterflies, Turku, Finland. (Poster presentation)

Community Service & Outreach

2023- Present Member of the Biological Sciences EDI Committee at the University of Toronto Scarborough

2017-2019 Leader of the butterfly group at the Lung Fu Shan Bioblitz

2014 Tutor, Yan Oi Tong Eco-Leaders Training Programme (Ecuadorian Amazon) [\[link to news article\]](#)

2012 Participant, K-11 Eco-Leaders Training Programme (Galapagos & Ecuador) [\[link to news article\]](#)

2011 Participant, KFBG China Program (Hainan)

Eco-guide, Ecobus

Voluntary wildlife surveyor, Lung Fu Shan Environmental Education Centre

2010-2011 Voluntary butterfly surveyor, Tai Po Environmental Association

2009-2010 External Vice Chairman, Environmental Life Science Society, SS, HKUSU (Now known as Ecology & Biodiversity Society)

Skills

Language Cantonese (Native), English (Fluent), Mandarin (Fluent), Spanish (Beginner)

Statistical Analysis R, ArcGIS, QGIS, SPSS, Oriana

Other software Photoshop, MS Office, EndNote, Final Cut Pro

Professional references

Marc W. Cadotte, Professor

Department of Biological Sciences

University of Toronto Scarborough

Email: marc.cadotte@utoronto.ca

Website: <https://cubes-labs.com/>

Timothy C. Bonebrake, Professor

School of Biological Sciences

The University of Hong Kong

Email: tbone@hku.hk

Website: <http://tropicalconslab.com>

Lauren C. Ponisio, Assistant Professor

The Institute of Ecology and Evolution

University of Oregon

Email: lponisio@uoregon.edu

Website: <http://www.ponisiolab.com/>