

KOK BEN TOH

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EDUCATION

University of Florida

PhD, *Interdisciplinary Ecology*

2016 - 2020

- Thesis: Predicting malaria - Models and Their Applications

University of Florida

MS *Statistics*

2017 - 2019

National University of Singapore

MSc *Biology*

2008 - 2010

- Thesis: Identifying determinants of background matching and disruptive coloration using computer simulations and humans as predators

National University of Singapore

BSc (Hons) *Life Sciences*

2003 - 2007

WORK/RESEARCH EXPERIENCE

Department of Biology

University of Florida

Postdoctoral Associate & Graduate Research Assistant

Apr 2020 to present

- Collect, analyze and visualize COVID-19, demographic and cellphone mobility data of Florida
- Create synthetic populations of Florida for agent-based model of COVID-19 transmission in Florida
- Assist in developing and testing the COVID-19 agent-based model (coded in C++)
- Collaborate with four other team members and write grants application; One successful application from internal funding

Department of Biological Sciences and Tropical Marine Science Institute

National University of Singapore

Research Assistant

Jan 2011 to July 2016

- Managed 3 main research projects: (1) Enhancing Singapore's Coral Reef Ecosystem in a Green Port, (2) Marinas as marine biodiversity refugia, and (3) Modeling and analyzing impacts of climate change on biodiversity in Singapore.
- Ran series of field experiments to improve scientific understanding and to optimize the methods of coral transplantation and restoration
- Conducted various biodiversity surveys to investigate the difference in macrobenthic, epibiotic and fish biodiversity within the marinas and the adjacent open waters.
- Reviewed the existing climate and biodiversity data and predicted how climate change would affect Singapore's terrestrial, coastal, marine and urban ecosystems, and the possible adaptation and mitigation strategies.
- Engaged the volunteers as part of the outreach effort; managed the project budget; liaised with government agencies; publish scientific papers, technical reports, magazine articles and book.

TEACHING EXPERIENCE

University of Florida

Instructor and Teaching Assistant

2019 - 2020

- Instructor of undergraduate level Environmental Science Lab course (EVS3000L)
- Teaching Assistant of graduate level Introduction to Bayesian Statistics in Life Sciences (FNR6560)

Software/Data Carpentry

Instructor

2017 - Present

- Two-day workshop of teaching software or data skill (includes R, Python, SQL) to researchers.
- Led or taught in multiple workshops in University of Florida, Georgia Institute of Technology, Texas A&M Kingsville and Genentech Inc.

National University of Singapore

Teaching Assistant

2008 - 2010

- Conducted tutorial, field or lab practical; assisted students with data analysis, assignment, and presentation. Modules taught: Animal Behavior; Biodiversity; Biophysical Environment of Singapore; Ecology and Environmental Processes; Marine Biology; Field Studies in Biodiversity

Mentorship Supervised 5 undergraduate research projects and managed 3 student interns while working in National University of Singapore.

LEADERSHIP AND VOLUNTEER EXPERIENCE

- Founder and coordinator of the R users group in University of Florida, 2017 - Present
 - Manage the UF R users mailing list. Ran weekly session of "R meetup" which provides UF R users a platform to learn, to share knowledge, and to get face-to-face help in R.

- Ran weekly "R code clinics" and given about numerous one-hour presentations on topics about R, ranging from basics to advanced level.
- Member and webmaster of the American Statistical Association Inclusion and Diversity working group, 2020 - Present.
- Member of Ecological Forecasting Institute (EFI), 2020 - Present
 - Involved in creating Shiny app and writing blog post about forecasting methods
- Executive board member and webmaster of the University of Florida Graduate Student Council, 2018 - 2019
- Member of UF School of Forest Resources and Conservation faculty search committee for lecturer, 2019
- Certified Instructor for Software/Data Carpentry Workshop, 2017 - Present

JOURNAL ARTICLES

- **Toh KB**, Bliznyuk N and Valle D. (In Press) "Improving National Level Spatial Mapping of Malaria through Alternative Spatial and Spatio-temporal Models". *Spatial and Spatiotemporal Epidemiology*.
- Srivathsa A, Rodrigues RG, Sharma S, **Toh KB** et al. (In Press) "The truth about scats and dogs: Next-generation sequencing and spatial capture-recapture models offer opportunities for conservation monitoring of an endangered social canid". *Biological Conservation*.
- Millar J, **Toh KB**, Valle D (2020) "To screen or not to screen: an interactive framework for comparing costs of mass malaria treatment interventions" *BMC Medicine*, 18:149.
- Ng CSL, Huang D, **Toh KB** et al. (2020) "Responses of urban reef corals during the 2016 mass bleaching event" *Marine Pollution Bulletin*, 154:111111.
- Hladish TJ, Pearson CAB, **Toh KB** et al. (2020) "Designing effective control of dengue with combined interventions" *Proceedings of National Academy of Science*, 117(6):3319-3325.
- Valle D, **Toh KB**, Laporta GZ, and Zhao Q. (2019) "Ordinal regression models for zero-inflated and/or over-dispersed count data" *Scientific Reports*, 9: 3046.
- Valle D, **Toh KB**, and Millar J. (2019) "Rapid prototyping of decision support tools for conservation" *Conservation Biology*, 33(6): 1448-1450.
- Ng CSL, **Toh KB**, Toh TC et al. (2019) "Distribution of soft bottom macrobenthic communities in tropical marinas of Singapore" *Urban Ecosystems*, 22(3): 443-453.
- Tanzil JTI, Goodkin NF, ..., **Toh KB**. (2019) "Multi-colony coral skeletal Ba/Ca from Singapore's turbid urban reefs: relationship with contemporaneous in-situ seawater parameters" *Geochimica et Cosmochimica Acta*, 250: 191-208.
- Taira D, Poquita-Du RC, Toh TC, **Toh KB** et al. (2018) "Spatial variability of fish communities in a highly urbanized reef system" *Urban Ecosystems*, 21(1): 85-95.
- Poquita-Du RC, **Toh KB**, Toh TC et al. (2017) "Effects of nursery table slope orientation on coral survival and growth" *Marine Biology Research*. 13(9): 975-982.
- Afiq-Rosli L, Taira D, Loke HX, Toh TC, **Toh KB** et al. (2017) "In situ nurseries enhance coral transplant growth in sedimented waters" *Marine Biology Research*. 13(8): 878-887.
- **Toh KB** and Todd PA, (2017) "Camouflage that is spot on! Optimization of spot size in prey background matching". *Evolutionary Ecology* 31(4): 447-461.
- Toh TC, Ng CSL, Loke HX, Taira D, **Toh KB** et al. (2017) "A cost-effective approach to enhance scleractinian diversity on artificial shorelines" *Ecological Engineering*, 99:349-357.
- **Toh KB**, Ng CSL, Wu B, et al.(2016) "Spatial variability of epibiotic assemblages on marina pontoons in Singapore". *Urban Ecosystems*, 20(1): 183-197.
- Chou LM, Toh TC, **Toh KB** et al. (2016) "Differential Response of Coral Assemblages to Thermal Stress Underscores the Complexity in Predicting Bleaching Susceptibility" *PLoS One*, 11(7): e0159755.
- **Toh KB**, Ng CSL, Leong WG, Jaafar Z and Chou LM (2016) "Assemblages and diversity of fishes in Singapore's marinas". *Raffles Bulletin of Zoology, Supplement* 32: 85-94.
- Todd PA, Phua H and **Toh KB**, (2015) "Background matching and disruptive colouration: Experiments using human predators and virtual crabs". *Current Zoology*, 61(4): 718-728.
- Toh TC, Ng CSL, Peh JWK, **Toh KB** and Chou LM, (2014) "Augmenting the post-transplantation growth and survivorship of juvenile scleractinian corals via nutritional enhancement". *PLoS One*, 9(6): e98529.
- Ng CSL, Toh TC, **Toh KB**, Guest J and Chou LM, (2013) "Dietary habits of grazers influence their suitability as biological controls of fouling macroalgae in ex situ mariculture". *Aquaculture Research*, 45(11): 1852-1860.

CONFERENCE PAPERS

- **Toh KB** and Valle D. "Modeling Malaria Prevalence: Comparison of Multiple Spatial and Spatio-Temporal Models" Conference of Statistical Practice (14 - 16 Feb 2019, New Orleans)
- **Toh KB** and Valle D. "Modelling Country-level Malaria Prevalence Using DHS Data: Comparison of Model Approaches" ASTMH Annual Meeting (28 Oct - 1 Nov 2018, New Orleans)
- Valle D, **Toh KB**, Amratia P, Millar J and Albuquerque P, "Novel modeling approaches to improve spatial predictions of malaria prevalence". ASTMH Annual Meeting (5 Nov - 9 Nov 2017, Baltimore)
- Chou LM, **Toh KB** and Ng CSL, "Coastal Urbanization Impacts on Biodiversity - the Case of Marinas in Singapore". The ACSEE Official Conference Proceedings 2015, p 375-381. Nagoya: The International Academic Forum (IAFOR). (12 - 14 June 2015, Kobe, Japan)
- **Toh KB**, Ng CSL, Chen D and Chou LM. "Seawalls can serve as a recipient site for hard coral transplantation" 2014 Biodiversity Research Symposium (May 24 2014, Singapore)

- **Toh KB**, Ng CSL, Leong GW et al. "Marine biodiversity in Singapore's marinas" Third Asia-Pacific Coral Reef Symposium (Jun 23-27 2014, Kenting, Taiwan)
- Chou LM, **Toh KB**, Tay YC and Phang VXH, "Coral Reefs in Singapore: Past, Present and Future". The ACSEE Official Conference Proceedings 2012: 431-436. Nagoya: The International Academic Forum (IAFOR). (4 - 6 May, Osaka, Japan)
- **Toh KB**, Chou LM, Tay YC and Phang VXH, "The Impacts of Climatic Extremes on Coastal and Marine Biodiversity in Singapore and Management Challenges". The ACSEE Official Conference Proceedings 2012 (2012): 423-430. Nagoya: The International Academic Forum (IAFOR). (4 - 6 May, Osaka, Japan)

OTHER PUBLICATIONS

- Book
 - Chou LM, Ng CSL, **Toh KB** et al. (2020) "Hidden Havens: Exploring Marine Life in Singapore's Marinas" National Parks Board, Singapore. 105 pp.
- Technical Reports
 - Chou LM, **Toh KB** and Ng CSL, "Marinas as marine biodiversity refugia - technical report", Singapore, pp 81. (2015, Project final report, prepared for National Parks Board).
 - Chou LM, Leong TM, **Toh KB**, Tay YC, Fam SD and Phang VXH, "Study on the long-term impact due to climate change: Impact on biodiversity". Singapore, 255 pp. (2012, Project final report, prepared for National Environment Agency).
- Magazine Articles
 - Chou LM, Ng CSL and **Toh KB**, "The marine biodiversity of Raffles Marina". Nautique, Jul/Aug, 2015: 16-17.
 - Chou LM, **Toh KB** and Ng CSL, "What lies beneath - biodiversity in Raffles Marina". Nautique, Mar/Apr, 2014: 12-13.

AWARDS

- University of Florida College of Agriculture and Life Sciences Scholarship, 2019
- University of Florida School of Natural Resources and Environment Assistantship and Fellowship, 2016
- National University of Singapore Research Scholarship, 2008

SKILLS

Programming Extensive experience in R and Shiny app development; Competent in Python, Java, C++, SQL, HTML and CSS.

Software JAGS/Nimble for Bayesian statistics. OS: Windows, macOS and Linux. Geographic Information System (via R). Experience in cloud computing, git and high performance computing.

Field PADI Advance Open Water, coral transplantation, substrate and benthic surveys underwater, water quality data

Languages English: professional proficiency; Mandarin and Cantonese: native; Malay: competent.