Athmanathan Senthilnathan | CV

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Appointments

- **Department of Environmental Studies, Dartmouth College**
  Postdoctoral scholar [September 2023 -]

- **Department of Ecology and Evolution, Stony Brook University**
  Postdoctoral associate [August 2021 - August 2023]

- **Department of Ecology and Evolutionary Biology, University of Tennessee**
  Graduate teaching assistant [January 2019 - May 2021]
  Graduate research assistant [January 2018 - December 2018]

- **Department of Mathematics, University of Tennessee**
  Graduate teaching assistant [August 2015 - December 2017]

Education

- **University of Tennessee, Knoxville**
  Doctor of Philosophy in Ecology and Evolutionary Biology [August 2015 - July 2021]
  Master of Science in Mathematics [August 2015 - December 2018]

- **Indian Institute of Science, Bangalore**
  Bachelor of Science (Research) in Mathematics [August 2011 - May 2015]

Publications

ORCID iD: 0000-0002-9665-8397

- **Senthilnathan, A.**, D'Andrea, R. Coexistence of competing plants under plant-soil feedback. In prep.
- **Senthilnathan, A.**, Ke, P., Yan, X., Crawford, K., D'Andrea, R. Challenges in linking plant-soil feedbacks to community structure. In prep.
- **Senthilnathan, A.**, Gavrilets, S. Ecological and eco-evolutionary dynamics of biotic-abiotic feedbacks. In revision.
- **Senthilnathan, A.** (2023) Smaller is better in competition for space. Proceedings of the Royal Society B, 290(2001), 20230627. DOI: 0.1098/rspb.2023.0627
- **Senthilnathan, A.**, D'Andrea, R. (2023). Niche theory for competition in a conditionable environment. Ecology, 104(4), e3993. DOI: 10.1002/ecy.3993
- Ou, W. J., Henriques, G. J., **Senthilnathan, A.**, Ke, P., Grainger, T. N., Germain, R. M. (2022). Writing Accessible Theory in Ecology and Evolution: Insights from Cognitive Load Theory. BioScience, 72(3), 300-313. DOI: 10.1093/biosci/biab133

Recommended in Faculty Opinions.

- Grainger, T. N., **Senthilnathan, A.**, Ke, P., Barbour, M. A., Jones, N. T., DeLong, J., Otto, S. P., O'Conner, M. I., Coblentz, K. E., Goel, N., Sakarchi, J., Szojka, M. M., Levine, J. M., Germain, R. M. (2021). An empicist's guide to using ecological theory. The American Naturalist, 199(1), 1-20. DOI: 10.1086/717206
  Recommended in Faculty Opinions.
- Tverskoi, D., **Senthilnathan, A.**, Gavrilets, S. (2021). The dynamics of cooperation, power, and inequality in a group-structured society. Scientific Reports, 11(1), 1-16. DOI:10.1038/s41598-021-97863-7
- **Senthilnathan, A.**, Gavrilets, S. (2021). Ecological consequences of intraspecific variation in coevolutionary systems. The American Naturalist, 197(1), 1-17. DOI: 10.1086/711886
- Ware, I. M., Fitzpatrick, C. R., **Senthilnathan, A.**, Bayliss, S. L., Beals, K. K., Mueller, L. O., ... & Palkovacs, E. P. (2019). Feedbacks link ecosystem ecology and evolution across spatial and temporal scales: Empirical evidence and future directions. Functional Ecology, 33(1), 31-42. DOI: 10.1111/1365-2435.13267
  Top downloaded 2018-2019 paper in Functional Ecology as of June 2020.
- Nair, G. G., **Senthilnathan, A.**, Iyer, S. K., & Guttal, V. (2019). Fission-fusion dynamics and group-size-dependent composition in heterogeneous populations. Physical Review E, 99(3), 032412.
  DOI: 10.1103/physreve.99.032412

Awards and Honours

- Tom Hallam Award [2021]
  Outstanding Graduate Student with interest in Math Ecology or Environmental Ecology

- National Institute for Mathematical and Biological Synthesis Graduate Award - Type A [2019]
  "This was a competitive process with evaluation of applications focusing on how well the student's research description aligned with the efforts of NIMBioS at the interface of the quantitative and life sciences and on the justification for how the award would enhance the student's research and/or education."

- Chancellor's fellowship from University of Tennessee [2015-2019]
  "The Chancellor's Fellowship is awarded quite selectively and is intended to attract exceptional graduate students to the University of Tennessee"

- National science fellowship (*Kishore Vaigyanik Protsahan Yojana*) [2011-2015]
  KVPY is a National Fellowship Program, funded by the Department of Science and Technology to select, highly motivated and talented students for pursuing research in pure science.

- Awarded 1^{st} prize in *Mathematics of Planet Earth* (MPE), *TIFR-CAM*, Bangalore [2013]
  MPE (2013) is a world wide initiative that aims to promote mathematical research on various processes occurring on planet Earth. In this competition I worked in a team which had another maths major and a physics major. We had built a physical model to explain abstract ideas of *Critical Transitions* in complex dynamical systems.

Oral presentations

- Ecological Society of America - Mid Atlantic section meeting at University of Delaware, April 30 - May 2, 2023
  Does plant-soil feedback promote coexistence or competitive exclusion?

- Ecology and Evolution Colloquioum, Stony Brook University, February 8 2023
  How does plant-soil feedback structure plant communities?
- Ecological Society of America and CSEE joint meeting at Montreal, August 14-19 2022
  Niche theory for plant competition in a conditionable environment
  (Organized the oral session "Integrating the frontiers of plant-soil feedback research")
- Models in Population Dynamics, Ecology, and Evolution at Leicester, April 20-24 2020
  (Cancelled due to the COVID-19 pandemic)
  Effects of heritable trait variation on two-species coexistence
- American Society of Naturalists satellite meeting at Asilomar, California, January 3-5 2020
  Coexistence in coevolutionary systems - effects of intraspecific variation
- Ecological Socity of America and USSEE joint meeting at Louisville, Kentucky, August 11-16 2019
  Ecological consequences of intraspecific variation for two-species interactions
- II Joint Congress on Evolutionary Biology at Montpellier, France, August 19-22 2018
  Coexistence and intraspecific variation
- Center for Ecological Sciences In-House symposium at the Indian Institute of Science, February 2015
  Group structures in heterogeneous populations

Working groups

- An empiricists' guide to ecological theory, University of British Columbia, Vancover campus. May 24-29, 2020 (Cancelled due to the COVID-19 pandemic)

Teaching Experience

- UT CIRTL Associate Level Certification in Teaching and Learning
- Graduate teaching at the University of Tennessee:
  - Recitations for MATH 151/152: Mathematics for life sciences from Fall 2015 to Fall 2017 with Dr. Louis Gross (Fall 2015, Spring 2016), Dr. Vitaly Ganusov (Spring 2017), and Dr. Christina Edholme (Fall 2016, 2017)
  - Discussions for BIO 150: Organismal and ecological biology in Spring 2019 with Dr. Benjamin Keck
  - Discussion for BIOL 240: Genetics in Fall 2019 with Dr. Joseph Williams
  - Teaching assistant for EEB 406/MATH 405: Models in Biology in Spring 2020 and 2021 with Dr. Christopher Strickland; and BIOL 260: Ecology in Fall 2020 with Dr. Stephanie Kivlin.

Mentoring

- Jennifer Cao : Post-bachelor researcher at the D'Andrea lab in Stony Brook University.
  [June 2022 - September 2022, May 2023 -]
- Kshan Pandey: High school researcher at the D'Andrea lab in Stony Brook University.
  [October 2021 - February 2023]

Professional Service

- Grant review for the Division of Enivronmental Biology, National Science Foundation

- Peer review for American Naturalist, Bulletin of Mathematical Biology, Functional Ecology, Frontiers in Ecology and Evolution, Jounral of Theoretical Biology, Ecological Monographs, PNAS Nexus, Theoretical Ecology
- Github workshop - Professional development at University of Tennessee, Ecology and Evolutionary Biology
- What does a postdoc do and how to find a postdoc position? - Graduate student professional development at Stony Brook, Ecology and Evolution
- Volterra award judge at ESA 2022
- Student poster judge at ESA Mid Atlantic section meeting 2023

Programming Skills

C, Octave and MATLAB, Mathematica, Bash, R, HTML/CSS, PHP, TYPE SETTING: LaTeX

Workshops

- Indo-French Center for Applied Mathematics (IFCAM) Summer School on Applied Mathematics, Indian Institute of Science, June 29 - July 15, 2015
- Blackwell-Tapia Conference, University of Tennessee at Knoxville. October 28-29, 2016
- Quantitative Genetics Tutorial, NIMBioS at the University of Tennessee. August 8-12, 2016
- Uncertainty Quantification for Biological Models (Tutorial), NIMBioS at the University of Tennessee, June 26-28, 2017
- XSEDE HPC Monthly Workshop - MPI, October 3-4, 2017
- Advanced Computing Facility (ACF) Spring Training, JICS at the University of Tennesse, March 15-16, 2018
- SEPEEG 2017, University of North Carolina at Chapel Hill. October 20-22, 2017

Outreach and Other Service

- Organized activities for kids to learn about evolution at the Farmer's market in Knoxville, TN. [July 2017]
- Volunteered to assist Darwin Day events at the University of Tennessee. [2016, 2017]
- Rules judge for the Tennessee Science Bowl. [2017-2020]
- Co-taught Animal Behavior for middle school kids at the kidsU summer camp in Knoxville, TN. [June 2019]
- President of Manthan - Indian Students Association in the University of Tennessee. [2017-2018]

References

- **Dr. Rafael D'Andrea,** Department of Ecology and Evolution, State University of New York, Stony Brook, New York, 11794, USA. Email: *rafael.dandrea@stonybrook.edu*
- **Dr. Sergey Gavrilets,** Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, Tennessee, 37996, USA. Email: *gavrila@tiem.utk.edu*
- **Dr. Louis Gross,** Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, Tennessee, 37996, USA. Email: *gross@tiem.utk.edu*
- **Dr. Vishwesha Guttal,** Centre for Ecological Sciences, Indian Institute of Science, Bangalore, Karnataka, 560012, India. Email: *vishwesha.guttal@gmail.com*