

Taeyoon Lee, Ph.D.

Instructional Assistant Professor
Department of Ecology and Conservation Biology, Texas A&M University

E-mail: taeyoon.lee@ag.tamu.edu | Phone: 706-207-1529

Research interests:

Precision forestry (GNSS accuracy in forested area), Geographic Information Systems (LiDAR & remote sensing), Forest inventory and monitoring, Forest mensuration, Plant physiology (photosynthesis and chlorophyll fluorescence)

Training and skills:

Programming: R (For data analysis & spatial analysis, 9/10), Javascript (For Google Earth Engine code, 7/10), SQL (For data science, 5/10), Linux for supercomputing (8/10)

Geospatial Software: ArcGIS (9/10), Google Earth Engine (6/10), R (9/10), ERDAS Imagine (5/10), ENVI (5/10)

Languages: Korean (Native), English (Advanced)

Writing/Designing Winning NSF Proposals Online Workshop, November 2022
Grant Training Center.

Creating WordPress Website series, June 2019
University of Georgia, Center for Continuing Education & Hotel, Athens, GA

Education:

Ph.D. in Forestry and Natural Resources August 2022

Warnell School of Forestry and Natural Resources, University of Georgia, Athens, United States

Dissertation: Analysis of GNSS point locations in forested areas.

Advisors: Dr. Pete Bettinger and Dr. Chris Cieszewski

M.S. in Environmental Horticulture February 2016

Environmental Horticulture, University of Seoul, Seoul, South Korea

Thesis: Impact of water deficit on *Populus sibirica* for reforestation in Mongolia.

Advisor: Dr. Suyoung Woo

Bachelor of Science in Environmental Horticulture February 2014

Environmental Horticulture, University of Seoul, Seoul, South Korea

Research Experience:

Instructional Assistant Professor

July 2024 – Present

Department of Ecology and Conservation Biology, Texas A&M University

Postdoctoral Researcher

August 2022 – July 2024

Adviser: Dr. Pete Bettinger (pbettinger@warnell.uga.edu, 706-542-1187, Okay to Contact)

Warnell School of Forestry and Natural Resources, University of Georgia

- Talladega National Forest LiDAR project
Create secondary products from LiDAR data collected for the Talladega Division, NAIP imagery, and field data. Integrate the secondary products into the Ecological Condition Class model for forest management.
- eYield project
Test the Internet-based forest management model with various scenarios.
- Positional accuracy of the smartphones project
Collect data to access the ability of smartphone-based GPS measurements to inform spatial interaction within a time geographic framework.
- Sharing Success meeting
Manage the “Sharing Success” meetings, an informal monthly meeting that provides a platform for faculty members and graduate students to share their experiences.

Graduate Research Assistant

January 2019 – July 2021

Adviser: Dr. Pete Bettinger (pbettinger@warnell.uga.edu, 706-542-1187, Okay to Contact)

Warnell School of Forestry and Natural Resources, University of Georgia

Helped develop an Internet-based educational system for foresters, students, and the public (Online Learning in Applied Forestry, OLAF).

Designed and conducted research to evaluate the accuracy of GPS receivers (iPhone and GPS watch) in forested conditions.

Published four papers and three papers were under review.

Presented the results four times at multiple conferences and was awarded 2nd place for “best student presentation”.

Assisted in writing a chapter on climate change’s impacts on forest planning.

Research Assistant

March 2016 – April 2017

Adviser: Dr. SuYoung Woo (wsy@uos.ac.kr, +82-10-3802-5242, Okay to Contact)

University of Seoul, South Korea

Developed plant physiology research project and collaborated with foreign researchers (Mongolia, Tunisia, and Thailand) which led to continuous research projects (about \$ 210,000 for 6 years).

Published 15 papers while tracking my master's degree.

Presented at the 2016 Ecological Society of America Annual Meeting, USA.

Teaching Courses:

Department of Ecology and Conservation Biology, Texas A&M University

- Diversity and Evolution of Plants (ECCB 301 (3), 2 sections)
- Forest Ecology (ECCB 309 (3), DE)
- Forest Measurements (ECCB 324 (2))
- Fire Ecology and Biogeochemistry (ECCB 303 (3))

Teaching Experience:

Instructional Assistant Professor

July 2024 – Present

Department of Ecology and Conservation Biology, Texas A&M University

Guest Lecturer

Department of Natural Resource Management, Texas Tech University

Mach 2024

- Introduction to Natural Resources Management (NRM 1401)

Postdoctoral researcher

August 2023

Warnell School of Forestry and Natural Resources, University of Georgia

- First-Year Odyssey Seminar (FYOS1001)

Lead teacher

August 2023 – May 2024

Athens Korean Culture School, Athens, Georgia

Develop and deliver contents about Korean ('Hangul') and culture to the Korean American youth.

Graduate Teaching Assistant

May 2017 – December 2018, August 2021 – July 2022

Adviser: Dr. Pete Bettinger, Dr. Gary Green

Warnell School of Forestry and Natural Resources, University of Georgia

- Field Orientation, Measurement, and Sampling in Forestry and Natural Resources (FANR3000), Fall 2018, 2021.
Supervised field lab exercises and collaborated with other teaching assistants for grading and management of students.
- Natural Resource Conservation (FANR1100), Spring 2018.

Designed two lectures concerning “Air pollutants” and “Climate change”.

Honors and Awards:

Xi Sigma Pi. Member. The National Forest Management Honor Society. U.S.	2021
Awarded the “Judith Fitzgerald Brooks Memorial Scholarship” from the Warnell School of Forestry and Natural Resources, University of Georgia.	2021
Awarded placement in the “2020 SAF Student Diversity Scholar Program”, 2020 Society of American Foresters (SAF) National Convention (Virtual).	2020
Honored with 2nd Place, “Best student presentation”, Society of American Foresters (SAF) National Convention, Louisville, KY.	2019
Awarded the “Barbara J. and Arnett C. Mace, Jr. Graduate Support Fund” from the Warnell School of Forestry and Natural Resources, University of Georgia.	2019
Awarded the “Judith Fitzgerald Brooks Memorial Scholarship” from the Warnell School of Forestry and Natural Resources, University of Georgia.	2018

Professional service:

Planning Committee member, 14 th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.	2023
Lead the “Sharing Success” meeting, Athens, Georgia, USA.	2021 - 2023
Poster Judging Panel Chair, 13 th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.	2021
Poster Judging Panel Member, 12 th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.	2019
Proceedings Committee Member, 12 th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.	2019
Committee Member of Korean Students Association (KSA), University of Georgia, Athens, Georgia, USA.	2017 - 2020

Publications: Refereed Journal Articles

1. Vatandaşlar, C., **Lee, T.**, Bettinger, P., Ucar, Z., Stober, J., & Peduzzi, A. (2024). Mapping percent canopy cover using individual tree- and area-based procedures that are based on airborne LiDAR data: Case study from an oak-hickory-pine forest in the USA. *Ecological Indicator*, 167, 112710.
2. **Lee, T.**, Vatandaşlar, C., Peduzzi, A., Bettinger, P., Merry, K., & Stober, J. (2024). Estimating Forest attributes using airborne LiDAR and vegetation indices: A case study

- from a natural pine-dominated ecosystem in the Southeastern US. *Remote Sensing*, 16(16) 2933.
3. Merry, K., Bettinger, P., & **Lee, T.** (2024). OLAF: Online Learning in Applied Forestry - Assessment of Learning Outcomes Among Forestry and Natural Resource Management College Students. *Journal of Extension*, 62(3), 30.
 4. Kane, T., Clatterbuck, W., Merry, K., **Lee, T.**, & Bettinger, P. (2024). Technology to Assist Land Management: User Satisfaction with an Online Forest Management System. *Lands*, 13(8), 1247.
 5. **Lee, T.**, Bettinger, P., Merry, K., & Cieszewski, C. (2023). The effect of forest variables on the accuracy of GNSS receivers. *PLoS ONE*, 18(3), Article e0283090.
 6. Vatandaşlar, C., Bettinger, P., Gutierrez Garzon, A.R., Merry, K., Boston, K., **Lee, T.**, & Uzu, J. (2023). Sustainability language in forest management plans: A comparative analysis for public forests of the US and Turkey. *Forests*, 14(3), 447.
 7. **Lee, T.**, Bettinger, P., Merry, K., Bektas, V., & Cieszewski, C. (2022). Mission Impossible: Positions determined by basic mapping-grade and recreation-grade GNSS receivers cannot emulate the actual spatial pattern of trees. *Mathematical and Computational Forestry and Natural-Resource Sciences*, 14(1), 15-31.
 8. Gutierrez Garcon, A.R., **Lee, T.**, Merry, K., Bektas, V., Cruise-Palmer, J., & Bettinger, P. (2022). Urban tree cover changes in San Diego, Denver, and Buffalo, USA, 2007-2018. *Heliyon*, 8(3), Article e09093.
 9. Bettinger, P., Merry, K., Garzon, A.R.G., **Lee, T.**, Siry, J., McNulty, S. & Gavazzi, M. (2021). Stakeholder perceptions on the need for updated tree species distribution maps. *Forests*, 12(10), Article 1367.
 10. **Lee, T.**, Bettinger, P., Cieszewski, C. J., & Gutierrez Garzon, A. R. (2020). The applicability of recreation-grade GNSS receiver (GPS watch, Suunto Ambit Peak 3) in a forested and an open area compared to a mapping-grade receiver (Trimble Juno T41). *PLoS ONE*, 15(4), Article e0231532.
 11. Khaine, I., Woo, S.Y., Kwak, M.J., Lee, S.H., Je, S.M., You, H.N., **Lee, T.Y.**, ... & Kim, J. (2018). Factors affecting natural regeneration of tropical forest across a precipitation gradient in Myanmar. *Forests*, 9(3), Article 143.
 12. Kwak, M. J., Je, S. M., Cheng, H. C., Seo, S. M., Park, J. H., Baek, S. G., Khaine, I., **Lee, T.Y.**, ... & Woo, S. Y. (2018). Night light-adaptation strategies for photosynthetic apparatus in yellow-poplar (*Liriodendron tulipifera* L.) exposed to artificial night lighting. *Forests*, 9(2), Article 74.
 13. Lee, H.K., Woo, S.Y., Kwak, M.J., Khaine, I., Kim, I.R., **Lee, T.Y.**, ... & Kim, W.I. (2018). Effect of sulfur dioxide on physiological responses, cysteine, and glutathione in pepper and eggplant. *Horticultural Science and Technology*, 36(4), 487-500.
 14. Jang, J.H., Kim, S.H., Khaine, I., Kwak, M.J., Lee, H.K., **Lee, T.Y.**, Lee, W.Y. & Woo, S.Y. (2018). Physiological changes and growth promotion induced in poplar seedlings by the plant growth-promoting rhizobacteria *Bacillus subtilis* JS. *Photosynthetica*, 56(4), 1188-1203.
 15. Je, S.M., Woo, S.Y., Lee, S.H., Kwak, M.J., **Lee, T.Y.** & Kim, S.H. (2018). Combined effect of elevated CO₂ concentration and drought on the photosynthetic apparatus and leaf morphology traits in seedlings of yellow poplar. *Ecological Research*, 33(2), 403-412.

16. **Lee, T.Y.**, Je, S.M., Kwak, M.J., Akhmadi, K., Tumurbaatar, E., Khaine, I., ... & Woo, S.Y. (2017). Physiological responses of *Populus sibirica* to different irrigation regimes for reforestation in arid area. *South African Journal of Botany*, 112, 329-335.
17. Lee, H.K., Khaine I., Kwak M.J., Jang J. H., **Lee T.Y.**, ...& Woo, S. Y. (2017). The relationship between SO₂ exposure and plant physiology: A mini review. *Horticulture, Environment, and Biotechnology*, 58(6), 523-529.
18. Kim, H.N., Jin, H.Y., Kwak, M.J., Khaine, I., You, H.N., **Lee, T.Y.**, Ahn, T.H. & Woo, S.Y. (2017). Why does *Quercus suber* species decline in Mediterranean areas?. *Journal of Asia-Pacific Biodiversity*, 10(3), 337-341.
19. Kwak, M.J., Lee, S.H., Khaine, I., Je, S.M., **Lee, T.Y.**, You, H.N., ... & Woo, S.Y. (2017). Stomatal movements depend on interactions between external night light cue and internal signals activated by rhythmic starch turnover and abscisic acid (ABA) levels at dawn and dusk. *Acta Physiologiae Plantarum*, 39(8), Article 162.
20. Khaine, I., Woo, S.Y., Kang, H., Kwak, M.J., Je, S.M., You, H.N., **Lee, T.Y.**, ... & Yang, L. (2017). Species diversity, stand structure, and species distribution across a precipitation gradient in tropical forests in Myanmar. *Forests*, 8(8), Article 282.
21. Jang, J. H., Woo, S. Y., Kim, S. H., Khaine, I., Kwak, M. J., Lee, H. K., **Lee, T.Y.**, ... & Lee, W. Y. (2017). Effects of increased soil fertility and plant growth-promoting rhizobacteria inoculation on biomass yield, energy value, and physiological response of poplar in short-rotation coppices in a reclaimed tideland: A case study in the Saemangeum area of Korea. *Biomass and Bioenergy*, 107, 29-38.
22. Lee, Y. Y., Lee, M. H., Yi, J. Y., **Lee, T. Y.**, Son, E. H., & Park, H. J. (2017). Response of germination rate and ascorbate peroxidase activity to cryopreservation of *Perilla frutescens* seeds with variable initial viabilities. *Korean Journal of Environmental Agriculture*, 36(4), 256-262.
23. Lee, J. K., Jang, J. H., Li, Y., Kim, H. N., Kwak, M. J., Khaine, I., **Lee, T.Y.**, ... & Woo, S. Y. (2017). Physiological characteristics of poplar clones in the Saemangeum reclaimed land. *Journal of Korean Society of Forest Science*, 106(2), 186-195.
24. **Lee, T.Y.**, Woo, S.Y., Kwak, M.J., InKyin, K., Lee, K.E., Jang, J.H., & Kim, I.R. (2016). Photosynthesis and chlorophyll fluorescence responses of *Populus sibirica* to water deficit in a desertification area in Mongolia. *Photosynthetica*, 54(2), 317-320.
25. You, H., Jin, H., Khaldi, A., Kwak, M., **Lee, T.**, Khaine, I., Jang, J., Lee, H., Kim, I., Ahn, T. & Song, J., (2016). Plant diversity in different bioclimatic zones in Tunisia. *Journal of Asia-Pacific Biodiversity*, 9(1), 56-62.

Other Publications: Non-Refereed Journal Articles and Book Chapters

1. Vatandaşlar, C., **Lee, T.**, Peduzzi, A., Bettinger, P., Merry, K., & Stober J. (2023). Mapping ecological condition classes of a natural pine-dominated national forest in the southeastern US. *IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2023)*, pp. 2676-2679.
2. Bettinger, P., Lee, T., Merry K., & Drummond D. (2023). *eYield User's Manual*

3. Bettinger, P., Gutierrez Garzon, A.R., Merry, K., Tsao, A., Bektas, V., **Lee, T.**, Uzu, J., and Siry, J. (2023). Part 2: Technologies for Climate Change Adaptation, 2.2. Forestry. Handbook on Climate Change and Technology, Urban, F., and J. Nordensvärd (eds.). Edward Elgar Publishing, Cheltenham, UK.
4. **Lee, T.** & Bettinger, P. (2020). GPS watch accuracy within a forest environment. Proceedings of the 12th Southern Forestry and Natural Resource Management GIS Conference. Merry, K., P. Bettinger, M. Crosby, I-K. Hung, T. Lee, R. Lowe, Q. Meng, J. Siry, and B. Song (eds.). Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA. pp. 71-81.

Other Publications: Manuscripts in Progress and Under Review:

1. **Lee, T.**, Vatandaşlar, C., Peduzzi, A., Bettinger, P., Merry, K., & Stober, J. The effect of inherent positional error of GNSS receiver on the accuracy of the model for estimating tree aboveground biomass using airborne LiDAR. In progress.
2. Vatandaşlar, C., Bettinger, P., Gutierrez Garzon, A.R., Merry, K., Boston, K., & **Lee, T.** Forest plans sustainability language vs modeling potential of recommended actions: What can be truly implemented? Submitted to Ecology.

Grants:

Grants Received

Talladega Division LiDAR Project - Part 4. Talladega National Forest, Alabama. Co-PI. (\$80,000). 2023-2025.

Oral presentations:

1. **T. Lee**, A. Peduzzi, C. Vatandaşlar, P. Bettinger, K. Merry, J. Stober. (2023). The effect of inherent positional error of GNSS receiver on the accuracy of models for estimating forest variables using airborne LiDAR. 14th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.
2. **T. Lee**, A. Peduzzi, C. Vatandaşlar, P. Bettinger, K. Merry, J. Stober. (2023). Estimating forest attributes using airborne LiDAR and vegetation indices: Case study from a natural pine-dominated ecosystem in the Southeastern US. Society of American Foresters National Convention. Sacramento, CA, USA.
3. P. Bettinger, K. Merry, C. Vatandaşlar, **T. Lee**. (2023). Explaining AI and remote sensing to non-scientists using Online Learning in Applied Forestry (OLAF). Society of American Foresters National Convention. Sacramento, CA, USA.
4. C. Vatandaşlar, **T. Lee**, A. Peduzzi, P. Bettinger, K. Merry, J. Stober. (2023) Mapping Ecological Condition Classes of a Natural Pine-dominated National Forest in the Southeastern US. The International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA.

5. P. Bettinger, K. Merry, D. Drummond, **T. Lee**. (2022). The eYield forest management model: Capabilities and assessment of effectiveness. Society of American Foresters National Convention. Baltimore, MD, USA.
6. P. Bettinger, K. Merry, **T. Lee**. (2022). Online learning in applied forestry (OLAF): Student experiences with the system. Society of American Foresters National Convention. Baltimore, MD, USA.
7. **T. Lee** and P. Bettinger. (2021). The effects of nearby trees on GNSS accuracy in forest environment. 13th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.
8. **T. Lee**, P. Bettinger, C. Cieszewski, K. Merry. (2020). The impact of GPS receivers' accuracy on spatial point pattern analysis. 2020 Society of American Foresters National Convention (Virtual), USA.
9. **T. Lee** and P. Bettinger. (2019). GPS watch accuracy within a forested environment. 12th Southern Forestry and Natural Resource Management GIS Conference, Athens, Georgia, USA.
10. **T. Lee**, P. Bettinger, C. Cieszewski, A.R. Gutierrez Garzon. (2019). The applicability of recreational-grade GNSS receiver (GPS watch, Suunto Ambit Peak3) in forestry. 2019 Society of American Foresters National Convention, Louisville, Kentucky, USA.
11. **T. Lee**, S. Y. Woo, M. J. Kwak, K. InKyun, K. E. Lee, J. H. Jang, I. R. Kim. (2016). Effects of different irrigation intervals on *Populus sibirica*'s growth in desertification area in Mongolia. 2016 Ecological Society of America Annual Meeting, Fort Lauderdale, Florida, USA.