

Hyun Seok Yoon

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Education

University of Tennessee, Knoxville Knoxville, TN
Ph.D. in Ecology and Evolutionary Biology 05/2024
GPA: 3.89 — Committee: Paul Armsworth (Advisor), Louis Gross, Mona Papes, Charles Sims, Henriette Jager

Cornell University Ithaca, NY
Bachelor of Science in Biology, Minor in Natural Resources 05/2017
Magna cum laude — GPA: 3.82 — Dean's List — Advisor: Irby Lovette

Professional Appointment

Post Doctoral

USGS Cooperative Unit in New Mexico State University

PI: Charles Yackulic, Kasey Pregler

2024 - 2025

Implementing structured decision-making for the conservation of Rio Grande Silvery Minnow with AI modeling.

Instructor

Instructor of record for Conservation Decision-making (EEB 423) and Landscape Ecology (EEB 422) at the University of Tennessee Knoxville

Employer: Jennifer Schweitzer

2026 Jan - May

Making spatio-temporal conservation decision making tool under future climate change uncertainty using deep reinforcement learning and finance theory.

Post Doctoral

IGCB Postdoctoral Fellow

Advisor: Kai Zhu, Neil Carter, Thiago Souza

2026 - current

Making spatio-temporal conservation decision making tool under future climate change uncertainty using deep reinforcement learning and finance theory.

Publications

Peer-Reviewed Journal Articles

- Jager, H., Yoon, H. S. (2025). Data centers: an emerging threat to U.S. freshwater biodiversity *Water Biology and Security*.
- Hallinger, K., Pegan, T. M., Andersen, M. J., Ardia, D. R., Belmaker, A., Chang van Oordt, D., Ferretti, V., Forsman, A. M., Gaul, J. R., Llambias, P. E., Orzechowski, S. C., Shipley, J. R., Stager, M., Taff, C. C., Uehling, J. J., Verhoeven, M. A., Vitousek, M. N., Wilson, M., Yoon, H. S., Wrege, P. H., Winkler, D. W. (2025). Comparing tree swallow dispersal strategies in a continuous mainland environment. *Ecology*.

- Yoon, H. S., Mingie, J., Cho, S., Barve, N., Armsworth, P. R. (2025). Land market feedback from land acquisition influences the prioritization of protected area networks in the Southeastern United States. *Ambio*.
- Armsworth, P. R., Fovargue, R., Hyman, A., Iacona, G., Sims, C., Yoon, H. S. (2025). Strategically timing land protection decisions to enhance biodiversity benefits. *Conservation Biology*.
- Yoon, H. S., Armsworth, P. R. (2025). The role of wealth inequality in community management of common-pool resources through voluntary sanctioning. *Natural Resource Modeling*.
- Yoon, H. S., Corsi, F., Miara, A., Welch, J., Jager, H. (2024). Climate-driven shifts in freshwater biodiversity will impact mitigation costs for hydropower. *The Science of the Total Environment*, 954(1). [management use]: cited in drafting the 2025 Tennessee State Wildlife Action Plan
- Jager, H., Manning, K., Welch, J. N., Corsi, F., Miara, A., Yoon, H. S., McManamay, R. A., Kao, S., Kusnierz, P. C., Gangrade, S. (2024). Indicators of thermal alteration in US waters reveal patterns of climate risk at the energy-water nexus. *Ecological Indicators*, 159, 111755.
- Yoon, H. S., Vijay, V., Armsworth, P. R. (2022). Accounting for spatial heterogeneity in the added conservation value of land protection when prioritizing protected areas. *Conservation Biology*, 36(5).
- Yoon, H. S., & Armsworth, P. R. (2022). Timing land protection to exploit favorable market conditions. *Biological Conservation*, 270.
- Gibson, N. L., Green, E. A., Herrera, R. G. A., Love, S. J., Turner, S. C., Weatherton, M., Faidiga, A. S., Luo, A. R., Ngoh, M. L., Shershen, E., Yoon, H. S., Blum, M. J. (2021). Toward an ecology of disasters: a primer for the pursuit of ecological research on disasters. *Ecology and Society*, 26(4).
- Winkler, D. W., Hallinger, K. K., Pegan, T. M., Taff, C. C., Verhoeven, M. A., Chang van Oordt, D., Stager, M., Uehling, J. J., Vitousek, M. N., Andersen, M. J., Ardia, D. R., Belmaker, A., Ferretti, V., Forsman, A. M., Gaul, J. R., Llambias, P. E., Orzechowski, S. C., Shipley, J. R., Wilson, M., Yoon, H. S. (2020). Full lifetime perspectives on the costs and benefits of lay-date variation in tree swallows. *Ecology*, 101(9).
- Getz, W. M., Salter, R., Muellerklein, O., Yoon, H. S., Tallam, K. (2018). Modeling epidemics: A primer and Numerus Model Builder implementation. *Epidemics*, 25, 9-19.

In review

- Hyman, A. A., Yoon, H. S., Barve, N., Jantz, S. M., Cho, S., Barve, N., Armsworth, P. R. (2026). Time horizons over which conservation outcomes will be evaluated influence today's land protection priorities. *Journal for Nature Conservation*.

Other Publications

- Bonilla, G., Conduff, L., Gibson, N., Love, S. J., Rogers, A., Walton, J., Yoon, H. S., & Armsworth, P. R. (2021). Associations between social vulnerability and environmental quality in the southeastern United States. White paper published in *Southeast Climate Adaptation Center*.

- Carlson, C. J., Muellerklein, O. C., Phillips, A. J., Burgio, K. R., Castaldo, G., Cizauskas, C. A., Cumming, G., Dallas, T. A., Doi, J., Miao, Z., Proctor, H., Yoon, H. S., & Getz, W. M. (2017). The Parasite Extinction Assessment & Red List: An open-source, online biodiversity database for neglected symbionts. *BioRxiv*, 192351.
- Yoon, H. S. (2011). Boy asks for the path on a tideland - essay on the perspective of a youth on Saemangeum tideland conservation movement against the land reclamation project. *Ddein-dol*. (Korean Publication)

Grants and Fellowships

- Graduate Student Senate Travel Award (2020 August); University of Tennessee; \$750
- Graduate Student Senate Travel Award (2021 April); University of Tennessee; \$960
- Ecology and Evolutionary Biology Departmental Research Grant (2021 May); University of Tennessee; \$2447
- Graduate Research Assistantship; Oak Ridge National Lab (2022 January); Tuition and Stipend for 2022 Spring.
- U.S. Department of the Interior Southeast Climate Adaptation Science Center Graduate Student Research Award (2022 January); \$1500
- Graduate Advancement & Training Education Fellowship (2022 May); University of Tennessee-Oak Ridge Innovation Institute (UT-ORII); Tuition, health insurance, and stipend (\$60,000) from 2022 Fall to 2024 Spring.
- Institute for Global Change Biology Fellowship (IGCB) (2025 Oct); University of Michigan IGCB; Stipend (\$62,000), research fund to conduct self-developed proposed research, benefits from 2026 to 2028.

Awards

- Minister Award, Korea Ministry of Oceans and Fisheries (March 2009)
- People who Brightened the World, Korea Green Foundation (Dec 2011)
- Tom Hallam Award for “Outstanding Graduate Student with interest in Math Ecology or Environmental Ecology”, University of Tennessee, Ecology and Evolution Department (May 2022)
- Outstanding Dissertation Award, University of Tennessee, Ecology and Evolution Department (May 2024)

Presentations and Workshops

Contributed

- (Poster) Yoon, H., Vijay, V., Armsworth, P. *Deciding When to Acquire Land for Conservation*. North American Congress for Conservation Biology; July 2020; Remote.
- (Presentation) Yoon, H., Vijay, V., Armsworth, P. *Spatial Heterogeneity in the Added Conservation Value From Protecting Land Influences Protected Area Priorities*. North American Congress for Conservation Biology; July 2022; Reno, NV.
- (Presentation) Yoon, H., Welch, J., Miara, A., Corsi, F., Jager, H. *Shift in freshwater biodiversity and its impact on environmental mitigation cost for hydropower plants in changing climate*. Association of Southeastern Biologists; March 2024; Chattanooga, TN.

Invited/Organized

- (Seminar Presentation) Yoon, H. *Strategizing Landscape Conservation over Space and Time*. Keep It Colorado (nonprofit land trust organization); March 2023; Remote.
- (Workshop) Yoon, H. *Ecological Niche Modeling and Maxent*. Aug 2023; Kangwon National University: Organized and conducted the workshop covering general methods and theories on Ecological Niche Modeling and the Maxent algorithm, followed by a hands-on exercise running Maxent in R. Around 20 people attended the workshop.
- (Workshop) Yoon, H., Yackulic, C., Wagnon, C., Kasey, P., Lawson, L. *Environmental Flows for Rio Grande Silvery Minnow Structured Decision Making Workshop*. July 2025; Organized and facilitated a structured decision-making workshop with 20 stakeholders focused on environmental flow strategies to support conservation of the Rio Grande Silvery Minnow.
- (Seminar Presentation) Yoon, H. *Making smarter conservation actions*. New Mexico State University, Department of Fish, Wildlife, and Conservation Ecology; November 2024.
- (Seminar Presentation) Yoon, H. *Making smarter conservation actions*. University of Texas at El Paso, Biological Sciences Department. April 2025
- (Seminar Presentation) Yoon, H. *Making smarter conservation actions*. University of Texas at El Paso, Biological Sciences Department. April 2025
- (Conference Presentation) Yoon H., Yackulic, C., Archdeacon, T., Lawson, L., Turner, T., Osborne, M., Wagnon, C., Pregler, K. Using dynamic programming with deep reinforcement learning to inform hatchery supplementation strategies for Rio Grande Silvery Minnow. NAU Biennial Conference; Sept 2025; Flagstaff, AZ.

Teaching Experience

University of Tennessee, Knoxville

Teaching Assistant for:

- BIOL150 (Introduction to Biology): 100 students (6-8 majors); lecturing in discussion section, office hour, quiz writing, and grading.
- EEB 484 (Conservation Biology) for 2 semesters: 40 students (4-6 majors); guest lecturing, office hour, quiz writing, and grading.
- BIO 240 (General Genetics): 100 students (4-6 majors); lecturing in discussion section, office hour, quiz writing, and grading.

Undergraduate Mentoring: Mentored two students through the Ecology and Evolutionary Biology undergraduate mentoring program as a graduate student from 2019 to 2021

Cornell University

Teaching Assistant for:

- PHYS1101 (General Physics): 120 students (2-3 majors); taught in self-learning class structure, where students come into a walk-in class environment to do the problem sets and experiments with the help of the assistants. Students took exams at their own pace advancing through the course material.

Services

- Refereed for *Nature Sustainability*, *Nature Communications*, *Communications Earth & Environment*, *Conservation Science and Practice*, *Conservation Biology*, *Environment Systems and Decisions*.
- Reviewed applications for the Transaction Cost Assistance Program sponsored by the land trust organization called Keep It Colorado.
- Projected mollusk species range distributions in the state of Tennessee from Yoon et al. (2024), published in *Science of the Total Environment*, was used and referenced in drafting the 2025 Tennessee State Wildlife Action Plan.

Other Work Experience

- **Oak Ridge National Lab Graduate Student Opportunity (GSO) Program**
Intern (2021)
Started research on the effect of power plants and climate change in the distribution shift of freshwater species. Gathered species occurrence data and environmental data to run species distribution modeling that would predict the distribution of freshwater fish and mussel. Also communicated with collaborators at CUNY to obtain and process the environmental data.
- **Yuseob Lab, Ewha Womans University**
Research Assistant (2017 - 2019)
Worked in a theoretical population genetics lab studying the evolution of sexual reproduction in RNA viruses.
- **Meritz Securities Co., Ltd**
Intern (2018)
Attended the winter internship program at Meritz financial group and learned the basics of accounting, trading, financial history, and leadership skills.
- **Greenfly Marketing**
Assistant (2017)
Worked as an assistant to an online affiliate marketing freelancer. Learned search engine optimization techniques and researching websites with a link index database.
- **Getz Lab, University of California, Berkeley**
Research Assistant (2017)
Developed a web application that featured the Parasite Extinction Application and Red List (PEARL) research. Also created online video tutorials for Numerus Model Builder,

a model building and analysis software tool for prototyping, classroom teaching, and optimization.

- **Winkler Lab, Cornell University**

Undergraduate Research Assistant (2013 - 2016)

Participated in a longitudinal study capturing and recording various morphological features and collected blood samples from Tree Swallows (*Tachycineta bicolor*) at an experimental field station under the supervision of professor David Winkler.