

Nathan Phillips

PROFESSOR, Earth & Environment

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Overview

Experience

Academic Appointments

Director, Earth House Living Learning Community	2016-2025
Professor, Earth & Environment, College of Arts & Sciences, Boston University	2013-present
Postdoctoral Fellow, Forest Science, Oregon State University	1998-2000

Education

Degrees

PhD Duke University	1997
BS California State University Sacramento	1989

Memberships

Consumer Liaison Group Coordinating Committee, ISO New England	2025
Undergraduate Affairs Team	2024-2025
BU Experiential Education Connector	2023
BU General Education Committee	2022-2023
Sierra Club Massachusetts	2017

Teaching Activity

Courses taught

Cocurricular: Earth House, course code: HUB-CC-184-A1	2025
Bike to BU, course code: HUB-XC-436-A1	2025
Plant Physiological Ecology, course code: CAS-EE-525-A1	2025
Keystone Independent Study II, course code: KHC-HC-504-E1	2025
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2024
Keystone Independent Study I, course code: KHC-HC-503-E3	2024
Cocurricular: Earth House, course code: HUB-CC-184-A1	2024
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2024
BU Cross-College Challenge Projects (OSC), course code: HUB-XC-433-A1	2024
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2023
Interdisciplinary Perspectives on Global Challenges I, course code: KHC-HC-301-A1	2023

Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2023
Interdisciplinary Perspectives on Global Challenges I, course code: KHC-HC-301-A1	2023
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2023
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2023
Plant Physiological Ecology, course code: CAS-EE-525-A1	2023
Plant Physiological Ecology, course code: CAS-EE-525-A1	2023
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2022
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2022
Interdisciplinary Perspectives on Global Challenges I, course code: KHC-HC-301-A1	2022
Interdisciplinary Perspectives on Global Challenges I, course code: KHC-HC-301-A1	2022
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2022
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2022
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2021
Problems in Energy, course code: GRS-EE-948-A1	2021
Problems in Energy, course code: GRS-EE-948-A1	2021
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2021
Interdisciplinary Perspectives on Global Challenges I, course code: KHC-HC-301-A1	2021
Interdisciplinary Perspectives on Global Challenges I, course code: KHC-HC-301-A1	2021
Plant Physiological Ecology, course code: CAS-EE-525-A1	2021
Problems in Environment, course code: GRS-EE-995-A1	2021
Keystone Independent Study II, course code: KHC-HC-504-A7	2021
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2021
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2020
Directed Study in Earth & Environment, course code: CAS-EE-491-A1	2020
Keystone Independent Study, course code: KHC-HC-503-E4	2020
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2020
Directed Study in Earth Sciences, course code: CAS-ES-492-P1	2020
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2019
Interdisciplinary Perspectives on Climate Change, course code: KHC 301	2019
Directed Study, course code: CAS-GE-491-P1	2019
Environmental and Urban Geology, course code: GRS-ES-913-P1	2019
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2019
Environmental and Urban Geology, course code: GRS-ES-914-P1	2019
Teaching College Geography, course code: GRS-GE-699-P1	2019
Biogeography, course code: CAS-BI-307-A1; CAS-GE-307-A1	2019
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2018
Environmental and Urban Geology, course code: GRS-ES-913-P1	2018
Teaching College Geography, course code: GRS-GE-699-W3	2018
Physical Principles of the Environment, course code: CAS-GE-510-A1	2018
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2018
Directed Study in Earth Sciences, course code: CAS-ES-492-P1	2018

Senior Independent Work, course code: CAS-GE-401-P1	2018
Senior Independent Work, course code: CAS-GE-402-P1	2018
TEACHNG COLL GG, course code: GRS-GE-699-P1	2018
PROB IN ENVIRON, course code: GRS-GE-996-P1	2018
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2017
Directed Study, course code: CAS-GE-491-P1	2017
Plant Physiological Ecology, course code: CAS-GE-525-A1	2017
Environmental and Urban Geology, course code: GRS-ES-913-A1	2017
TEACHNG COLL GG, course code: GRS-GE-699-W3	2017
PROB IN ENVIRON, course code: GRS-GE-995-P1	2017
First Year Experience Topics, course code: CAS-FY-103-F5	2017
Biogeography, course code: CAS-GE-307-A1; CAS-BI-307-A1	2017
Sustainability Science: Earth House Practicum 2, course code: CAS-EE-396-A1	2017
TEACHNG COLL GG, course code: GRS-GE-699-P1	2017
Sustainability Science: Earth House Practicum 1, course code: CAS-EE-395-A1	2016
Directed Study, course code: CAS-GE-491-P1	2016
TEACHNG COLL GG, course code: GRS-GE-699-W3	2016
Physical Principles of the Environment, course code: CAS-GE-510-A1	2016
Directed Study, course code: CAS-GE-492-P1-S	2016
Biogeography, course code: CAS-BI-307-A1; CAS-GE-307-A1	2016
First Year Experience Topics, course code: CAS-FY-103-F5	2016
Earth House Sustainability Practicum 2, course code: CAS-EE-196-A1	2016
PROB IN ENVIRON, course code: GRS-GE-996-P1	2016
Physical Principles of the Environment, course code: CAS-GE-510-A1	2015
Earth House Sustainability Practicum 1, course code: CAS-EE-195-A1	2015
Directed Study, course code: CAS-GE-491-P1	2015
PROB IN ENVIRON, course code: GRS-GE-995-P1	2015
Biogeography, course code: CAS-BI-307-A1; CAS-GE-307-A1	2015
Directed Study in Earth Sciences, course code: CAS-ES-492-P1	2015
Senior Independent Work, course code: CAS-GE-402-P1	2015
PROB IN ENVIRON, course code: GRS-GE-996-P1	2015
Senior Independent Work, course code: CAS-GE-401-P1	2014
Plant Physiological Ecology, course code: CAS-GE-525-A1	2014
Directed Study, course code: CAS-GE-492-P1-S	2014
Directed Study in Earth Sciences, course code: CAS-ES-492-P1	2014
Courses developed	
Bike2BU - XCC 433 D1, Cross College Challenge	2022
Other teaching activities	
KHC 301 Interdisciplinary Perspectives on Climate Change	2020

Professional Activity

Administrative Roles/Activities

Chair, BU Advising Network	2023
Member	2022-2024
Chair	2022
Chair, BU Advising Network	2020-2021
Chair, BU Advising Network	2019
Editorships	
Editorial in Tree Physiology	2017-2018
Outreach or Community services	
Praxis Fellow, Praxis Fellows are educators, writers, artists, and academics who partner with the Center to incorporate our shared Principles into their practice including art, teaching, research, and writing	2024
Gas Leak Allies, I participate and provide science advising to a bi-weekly roundtable of 20 non-profit organizations and individuals known as the Gas Leak Allies. This group has won 2 signed state laws (2014 and 2016) and a first-of-its-kind city ordinance (Boston) to address and accelerate the repair of natural gas pipeline leaks	2019
Petitioner, Mass DEP appeal hearing on air permit to Enbridge Corporation Compressor Station in Weymouth, Filed 17 pages of scientific testimony for an appeal to an air permit granted by the Mass DEP to Enbridge. This testimony critiqued flaws in the air dispersion modeling conducted by the applicant, and financial conflicts of interest by the Baker administration which constitute scientific misconduct	2019
Merrimack Valley Gas Disaster Relief, Sept 13, 2018 gas disaster. No heat, no cooking for 8517 addresses. Started a gofundme, raised ~17k (with funds additional to the \$14.4k gofundme) and organized volunteers to deliver over 700 cooktops to residents to cook and heat hot water	2018
Council of Environmental Deans and Directors, National Council for Science and the Environment, United States: Served as Acting President and Vice President during 2017	2017
BU CAS Diversity and Inclusion Committee, Boston University, United States: Serve on Diversity and Inclusion Committee for CAS. Contribute governance section for report	2017
Gas Leak Allies, Science advisor to grassroots roundtable consisting of Mothers Out Front, Conservation Law Foundation, Sierra Club, Clean Water Action, Boston Climate Action Network, Massachusetts Climate Action Network, 350 Lowell, Salem Alliance for the Environment, Home Energy Efficiency Team. This group successfully developed and won passage of two laws in the Commonwealth (2014 and 2016) to address the problem of gas leaks which research I led (Phillips et al. 2013) first uncovered. Moreover, this group wrote and won passage of Boston's 2017 ordinance to accelerate gas leak repair	2017
Other professional activities	
Energy Shift Boston	2019
Grants	
Climate Change AI, Innovative Multi-Scale Approach for Monitoring and Mitigating Urban Methane Emissions, \$148,353	2024-present
Zero Carbon MA, Household Methane Sampling, \$60,000	2024
Zero Carbon Massachusetts, Household methane sampling, \$60,000	2023-2024
Conservation Law Foundation, Tree Investigation Project, \$5,000	2023-2024
NOAA, Measuring residential methane emissions across the United States using mailed sampling kits., \$250,000	2022-present
National Science Foundation, Collaborative Research: Geospatial Science for All - Broadening Environmental Research Participation with Accessible Sensors & Mobility, \$500,401	2021-present

The Hideo Sasaki Foundation, Energy Shift Boston, \$15,000	2019-2020
The Hideo Sasaki Foundation, Energy Shift Boston extension, \$10,000	2019-2021
National Science Foundation, NRT: Boston University - Partnering Graduate Students and Cities to Tackle Urban Environmental Challenges, \$2,998,000	2017-present
California Council on Science and Technology, Science Policy Fellowship in the Massachusetts Legislature, \$25,000	2017-present
California Council on Science and Technology, Science Policy Fellowship in the Massachusetts Legislature, \$27,115	2017-2020
National Science Foundation, Coupling of infrastructure, Green Infrastructure, And communities, \$465,832	2016-2021
National Science Foundation, INFEWS/T1: Modeling resilient, efficient and secure urban FEW networks, \$882,631	2016-present
Environmental Protection Agency, Impact of fugitive methane emissions on ecosystem services across a gradient of shale gas extraction to nature, \$34,000	2014-2016
Picarro, Inc, Picarro-BU Methane Surveyor Project, \$14,780	2013-2014
Conservation Law Foundation, Analysis of Natural Gas Leak Problem in Boston, \$41,560	2013-2014
Barr Foundation, Inc., Analysis of Natural Gas Leak Problem in Boston, \$41,560	2013-present
National Science Foundation, Collaborative Research: CyberSEES: Type 2: Genome: A Spatio-Temporal-Spectral Landsat Archive to Monitor Human Sustainability, \$802,207	2013-present
Picarro, Inc, Picarro-BU Methane Surveyor Project, \$49,628	2013-present
National Science Foundation, CNH-Ex: Uncovering Hidden Interactions Among Leaking Natural Gas Infrastructure, Green Infrastructure, and Communities, \$231,997	2012-present
Environmental Defense Fund, Methane Inputs from Natural Gas Infrastructure in Greater Metropolitan Boston, \$89,906	2012-2013
Environmental Defense Fund, Methane Inputs from Natural Gas Infrastructure in Greater Metropolitan Boston, \$89,964	2012-present
National Science Foundation, Collaborative Research: ULTRA-Ex: Metabolism of Boston, \$44,408	2012-present
National Science Foundation, CNH-Ex: Uncovering Hidden Interactions Among Leaking Natural Gas Infrastructure, Green Infrastructure, and Communities, \$213,939	2011-present
Conservation Law Foundation, Natural Gas Leaks in Massachusetts, \$66,000	2011-present
Conservation Law Foundation, Natural Gas Leaks in Massachusetts, \$66,000	2011
National Science Foundation, Geospatial Technologies to Measure, Map, Assess, and Analyze Boston's Carbon Footprint, \$1,160,297	2011-present
National Science Foundation, NSF GK-12 GRADUATE STEM FELLOWS IN K-12 EDUCATION GLACIER - GLOBAL EXCHANGE INITIATIVE - EDUCATION & RESEARCH, \$2,828,286	2010-2017
National Science Foundation, COLLABORATIVE RESEARCH: ULTRA-EX: METABOLISM OF BOSTON, \$254,361	2009-2013
National Science Foundation, Coupling of infrastructure, Green Infrastructure, And communities, \$484,136	
National Science Foundation, CNH-Ex: Toward a Healthy Coupling of Natural Gas Infrastructure, Green Infrastructure, and Communities, \$281,835	
Environmental Protection Agency, Impact of fugitive methane emissions on ecosystem services across a gradient of shale gas extraction to nature, \$34,000	

Publications

Phillips, N., Ackley, R., & Krasner, A. (2024). Elevated Methane in Massachusetts and Rhode Island Homes Using Fracked Gas. *Earth ArXiv*, 1-15. doi:[10.31223/X5G705](https://doi.org/10.31223/X5G705)

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- Buckley, S., Connolly, C. L., Levy, J. I., Templer, P. H., Ashmore, J., Carvalho, L., . . . Fabian, M. P. (2023). Carbon, indoor air, energy and financial benefits of coupled ventilation upgrade and enhanced rooftop garden installation: An interdisciplinary climate mitigation approach. *Sustainable Cities and Society*, 97, 104792. doi:[10.1016/j.scs.2023.104792](https://doi.org/10.1016/j.scs.2023.104792)
- Phillips, N., & Ackley, R. (2023). *Strategic Electrification in Washington, D.C.: Neighborhood Case Studies of Transition From Gas to Electric-based Building Heating* (F.C. Nos. 1167_1154_1130 DCG Strategic Electrification Study). DC: Washington, DC Department of Energy and Environment.
- Nicholas, D., Ackley, R., & Phillips, N. G. (2023). A simple method to measure methane emissions from indoor gas leaks.. *PLoS One*, 18(11), e0295055. doi:[10.1371/journal.pone.0295055](https://doi.org/10.1371/journal.pone.0295055)
- Phillips, N., & Oren, R. (2023). Duke Forest FACE (FACTS-I): Plant and Soil Response Data. doi:[10.15485/2283434](https://doi.org/10.15485/2283434)
- Buckley, S., Sparks, R., Cowdery, E., Stirling, F., Marsching, J., & Phillips, N. (2022). Enhancing crop growth in rooftop farms by repurposing CO2 from human respiration inside buildings. *Frontiers in Sustainable Food Systems*, 6. doi:[10.3389/fsufs.2022.918027](https://doi.org/10.3389/fsufs.2022.918027)
- Connolly, C., Buckley, S., Templer, P., Ashmore, J., Carvalho, L., Phillips, N., . . . Fabian, M. P. (2022). Modeling energy and exposure benefits through integrated ventilation upgrades and rooftop gardens in a high school in Boston, MA. *ISEE Conference Abstracts*, 2022(1). doi:[10.1289/isee.2022.p-0287](https://doi.org/10.1289/isee.2022.p-0287)
- Michanowicz, D. R., Dayalu, A., Nordgaard, C. L., Buonocore, J. J., Fairchild, M. W., Ackley, R., . . . Spengler, J. D. (2022). Home is Where the Pipeline Ends: Characterization of Volatile Organic Compounds Present in Natural Gas at the Point of the Residential End User.. *Environ Sci Technol*, 56(14), 10258-10268. doi:[10.1021/acs.est.1c08298](https://doi.org/10.1021/acs.est.1c08298)
- Wright, J., Ackley, R., Gopal, S., & Phillips, N. (2022). The BosWash Infrastructure Biome and Energy System Succession. *Infrastructures*, 7(7), 95. doi:[10.3390/infrastructures7070095](https://doi.org/10.3390/infrastructures7070095)
- Buckley, S., Phillips, N., & Phillips, N. (2021). Repurposing CO2 from Human Respiration Inside Buildings to Enhance Growth in Rooftop Gardens. *Research Square*. doi:[10.21203/rs.3.rs-163704/v1](https://doi.org/10.21203/rs.3.rs-163704/v1)
- Harrison, J. L., Reinmann, A. B., Maloney, A. S., Phillips, N., Juice, S. M., Webster, A. J., & Templer, P. H. (2020). Transpiration of Dominant Tree Species Varies in Response to Projected Changes in Climate: Implications for Composition and Water Balance of Temperate Forest Ecosystems. *Ecosystems*, 23(8), 1598-1613. doi:[10.1007/s10021-020-00490-y](https://doi.org/10.1007/s10021-020-00490-y)
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- Keyes, T., Ridge, G., Klein, M., Phillips, N., Ackley, R., & Yang, Y. (2020). An enhanced procedure for urban mobile methane leak detection.. *Heliyon*, 6(10), e04876. doi:[10.1016/j.heliyon.2020.e04876](https://doi.org/10.1016/j.heliyon.2020.e04876)
- Templer, P., Harrison, J., Reinmann, A., Socci Maloney, A., Phillips, N., Juice, S., & Webster, A. (2020). Sap Flow in the Soil Freezing Study at the Hubbard Brook Experimental Forest. Environmental Data Initiative. doi:[10.6073/pasta/0091815dab851bf053528c878f963ec1](https://doi.org/10.6073/pasta/0091815dab851bf053528c878f963ec1)
- Ma, Y., Wright, J., Gopal, S., & Phillips, N. (2020). Seeing the invisible: From imagined to virtual urban landscapes. *Cities*, 98, 102559.
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- wright, J., pitts, J., ackley, B., Gopal, S., & ma, Y. (2019). The Impacts of Leaked Natural Gas on the Integrity of Urban Street Trees. In <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/625990>. San Francisco: AGU.
- Phillips, N. (2019). *Rolling the Dice: Assessment of Gas System Safety in Massachusetts*. Boston, MA: Gas Leak Allies. Retrieved from <https://www.gasleaksallies.org/rolling-the-dice>
- Phillips, N. (2019). *PRE-FILED TESTIMONY IN SUPPORT OF THE TEN PERSONS GROUP BY NATHAN G. PHILLIPS* (none). Mass DEP: MassDEP file room.

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