

Celina Balderas Guzmán

Department of Landscape Architecture
College of Built Environments
University of Washington
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RESEARCH INTERESTS

coastal climate adaptation and maladaptation, sea level rise, coastal wetlands, regional adaptation planning, environmental data science, stormwater, green infrastructure, socio-ecological systems

EDUCATION

- 2022 **PhD in Landscape Architecture & Environmental Planning**
Designated Emphasis in Global Metropolitan Studies
University of California, Berkeley
- 2013 **Master in City Planning**
+ Environmental Planning Certificate
Department of Urban Studies and Planning
Massachusetts Institute of Technology
- 2013 **Master of Science in Architecture Studies in Urbanism**
Department of Architecture
Massachusetts Institute of Technology
- 2007 **Bachelor of Science in Architecture**
Department of Architecture
Massachusetts Institute of Technology

FACULTY APPOINTMENTS

- 2024- Adjunct Assistant Professor, Department of Civil & Environmental Engineering
University of Washington
- 2022- **Assistant Professor**, Department of Landscape Architecture
Faculty Affiliate, Center for Studies in Demography and Ecology
Faculty Affiliate, Center for Environmental Politics
University of Washington

GRANTS AND FELLOWSHIPS

- 2023- 2024 **Cascadia Coastlines and Peoples Hazards Research Hub**
Research Funding: \$40k (PI)
“Visualizing Dynamic Processes and Social-Ecological Systems to Advance Coastal Resilience Action”

- 2023– 2025 **UW Earthlab Innovation Grant**
 Research Funding: \$75k (Collaborator)
 “Cultivating Transdisciplinary Support for Equitable and Resilient Floodplain Solutions”
- 2023 **UW Population Health Initiative Climate Change Planning Grant**
 Research Funding: \$10k (Co-PI)
 “Linking Climate Adaptation and Public Health Outcomes in Yavatmal, Maharashtra”
- UW Program on Climate Change Climate Science Research Acceleration Fund**
 Research Funding: \$35k (Co-PI)
 “Theorizing and Evidencing Climate Maladaptation through Education, Scholarship, and External Network Development”
- 2022 **UW Program on Climate Change Climate Science Research Acceleration Fund**
 Workshop Funding: \$7k (Co-PI)
 “Maladaptation Workshop”
- 2022 **UW eScience Institute Winter Incubator Program**
 Research Funding (in-kind support) (PI)
 “Wetland Communities in the United States”
- 2017– 2022 **National Science Foundation (NSF) Graduate Research Fellowship**
 Dissertation Funding: \$132k
- 2017– 2021 **UC Berkeley Eugene Cota-Robles Fellowship**
 Dissertation Funding: \$87k
- 2020 **National Socio-Environmental Synthesis Center (SESYNC) Graduate Student Research Fellowship**
 Honorarium: \$2k
- 2020 **NSF Graduate Research Internship Program Award**
 Dissertation Funding: \$5k
- 2018– 2020 **National Socio-Environmental Synthesis Center (SESYNC) Graduate Pursuit**
 Research Funding (in-kind support) (PI)
 “Identifying socio-environmental watershed typologies based on stormwater pollution using machine learning”
- 2019 **UC Berkeley Global Metropolitan Studies Summer Research Award**
 Dissertation Funding: \$2.4k
- 2015– 2017 **MIT Abdul Latif Jameel Water and Food Systems Lab Seed Grant**
 Research Funding: \$200k (Lead Researcher)
 “Design Guidelines for Urban Stormwater Wetlands”

2016 **MIT Center for Art, Science, and Technology Exhibition Grant**
Exhibition Funding: \$30k (Collaborator)
“The Future of Suburbia”

2012 **Emerson Travel Award**
MIT Department of Urban Studies and Planning

PUBLICATIONS

UNDER REVIEW

Balderas Guzmán, Celina. “Networked Shorelines: A Review of Vulnerability Interactions Between Human Adaptation to Sea Level Rise and Wetland Migration.” *Global Environmental Change*. Journal Impact Factor: 8.9

PEER-REVIEWED

2023 **Balderas Guzmán, Celina,** K. Buffington, K. Thorne, G. Guntenspergen, M. Hummel, M. Stacey. “Future Marsh Evolution Due to Tidal Changes Induced by Human Adaptation to Sea Level Rise.” 10.1029/2023EF003518
Earth’s Future. Journal Impact Factor: 8.2

2022 **Balderas Guzmán, Celina,** R. Wang, O. Muellerklein, M. Smith, and C. Eger. “Comparing Stormwater Quality and Watershed Typologies across the United States: A Machine Learning Approach.” 10.1016/j.watres.2022.118283
Water Research. Journal Impact Factor: 12.8

2018 **Balderas Guzmán, Celina,** S. Cohen, M. Xavier, T. Swingle, W. Qiu, H. Nepf. “Island Topographies to Improve Stormwater Detention Ponds and Treatment Wetlands.” 10.1016/j.ecoleng.2018.02.020
Ecological Engineering. Journal Impact Factor: 3.8

BOOK CHAPTERS

2024 Arkema, Katie K., Samantha K. Cunningham, Jade M.S. Delevaux, **Celina Balderas Guzmán,** Sarah Klain, Joleah Lamb, Laura K. Nelson, Steven Scyphers, Heidi Stewart, and Ariana Sutton-Grier. “Beneficiaries, Equity, and Trade-Offs in Estuarine and Coastal Ecosystem Services.” In *Treatise on Estuarine and Coastal Science*, 2nd Edition. Elsevier, In Press

2017 **Balderas Guzmán, Celina.** “Suburban Wetlandia” in *Infinite Suburbia*. 17 pages.

EDITED VOLUMES

2017 Berger, A., J. Kotkin, **Celina Balderas Guzmán.** *Infinite Suburbia*. Princeton Architectural Press. 784 pages. Awarded an Honorable Mention in the 2020 Bruno Zevi Book Awards, International Committee of Architectural Critics (CICA).

WHITE PAPERS AND REPORTS

- 2023 Shah, S. **Celina Balderas Guzmán**, N. Denke, “Maladaptation Research at UW” for UW Program on Climate Change
- 2018 **Balderas Guzmán, Celina**, H. Nepf, A. Berger. “Design Guidelines for Urban Stormwater Wetlands.” MIT Norman B. Leventhal Center for Advanced Urbanism. 167 pages.

CONFERENCE PROCEEDINGS

- 2016 *Scaling Infrastructure*. Princeton Architectural Press. 180 pages.
MIT Norman B. Leventhal Center for Advanced Urbanism Biennial Conference

SOFTWARE

- 2023 **Balderas Guzmán, Celina**. “Modeling the Effect of Changing Tides on Marsh Surface Elevation and Vegetative Cover [Workflow].” Zenodo. 10.5281/zenodo.7552831.

CONFERENCE PRESENTATIONS

- 2024 American Association of Geographers. “Cyclical Maladaptation: The Inevitability of Maladaptation in Unjust Systems.” April 17. Oral Presentation.
- 2023 Coastal and Estuarine Research Federation. “Who Lives in Wetland Migration Corridors?” November 16. Oral Presentation.
- Managed Retreat Conference. “Managed Retreat and Wetland Migration: Vulnerability Interactions Between Moving People and Wetlands.” June 23. Oral Presentation.
- American Association of Geographers. “Adaptation and Maladaptation Between Humans and Wetlands on the Coast.” March 24. Oral Presentation.
- 2022 American Geophysical Union. “Future Marsh Evolution Due to Tidal Changes Induced by Human Adaptation to Sea Level Rise.” December 13. Oral Presentation.
- 2021 Coastal and Estuarine Research Federation. “How Tidal Wetlands Could Evolve in Estuaries with Hardened Shorelines.” November 4. Oral Presentation.
- Council of Educators in Landscape Architecture. “The Landscape of American Urban Stormwater Pollution.” March 17. Oral Presentation.
- 2020 American Geophysical Union. “Identifying Relationships Between Urban Stormwater Signatures and Watershed Characteristics Using Interpretable Machine Learning.” December 15. Poster.
- American Association of Geographers. “Stormwater Terroir: The Geography of Urban Stormwater Pollution.” (Cancelled due to COVID-19)

Council of Educators in Landscape Architecture. “The Landscape of American Urban Stormwater Pollution.” (Cancelled due to COVID-19)

2019 American Geophysical Union. “Urban Stormwater Signatures Across the United States: A Machine Learning Approach.” December 11. Poster.

2018 Council of Educators in Landscape Architecture. “Multi-Functional Urban Stormwater Wetlands.” March 22. Oral Presentation.

2017 World Environmental and Water Resources Congress. “Designing Urban Stormwater Wetlands.” May 24. Oral Presentation.

New England Water Environment Association Annual Conference. “Urban Stormwater Wetlands: Research into Form and Function.” January 23. Oral Presentation.

TEACHING AT UW

CLASSROOM INSTRUCTION

2024 LA403 *Ecological Systems Studio*. 6-unit studio. 34 students.
LA563 *Ecological Design and Planning*. 3-credit seminar. 24 students

2023 LA570 *Theory & Scholarship in Landscape Architecture*. 3-credit seminar. 24 students.
LA563 *Ecological Design and Planning*. 3-credit seminar. 28 students
LA571 *Faculty Seminar*. 1-credit seminar. 25 students

2022 LA570 *Theory & Scholarship in Landscape Architecture*. 3-credit seminar. 30 students

OTHER TEACHING

2022– 2023 Coastal and Estuarine Research Federation (CERF) Student Design Competition for Tillamook, OR

Urban Ecology Lab Meetings

STUDENTS SUPERVISED

2023-2024 Autumn Davis, MArch/MLA
Sinong Wu, MLA

2022– 2023 Will Prescott, MArch/MLA
Zachary McBride, MLA

PRIOR TEACHING EXPERIENCE

Spring 2018 **UC Berkeley**
Department of Landscape Architecture & Environmental Planning
Teaching Assistant: “Hydrology for Planners”
Technical course for Master of Landscape Architecture students

Fall 2016 &
Spring 2017 **Boston Architectural College**
Department of Architecture

Co-Instructor/Adjunct Faculty: “Prototypes for a New Hydrological Era”
Studio for Master of Architecture students

Jan 2017

Massachusetts Institute of Technology

Department of Urban Studies and Planning

Co-Instructor: “Infrastructure for Green Cities:

Designing Urban Constructed Wetlands”

Workshop for urban planning, architecture, and env. engineering students

PROFESSIONAL EXPERIENCE

2014- 2017

Research Associate

Norman B. Leventhal Center for Advanced Urbanism

School of Architecture and Planning

Massachusetts Institute of Technology

2008- 2009

Urban Designer

The Paul Hogarth Company, Landscape & Urban Design

Belfast, Northern Ireland, United Kingdom

PROFESSIONAL MEMBERSHIPS

American Association of Geographers (AAG)

Council of Educators in Landscape Architecture (CELA)

American Geophysical Union (AGU)

Coastal and Estuarine Research Federation (CERF)

American Society of Adaptation Professionals (ASAP)

TECHNICAL SKILLS

PROGRAMMING LANGUAGES

Python (advanced), R (advanced)

DATA SCIENCE SKILLS

Geospatial Analysis, Functional Programming, Data Visualization, Data Cleaning, Manipulation, & Analysis, APIs, Statistics and Machine Learning

DATA SCIENCE TOOLS

Git, JupyterLab, Markdown

DESIGN SOFTWARE

AutoCAD, Rhino, Grasshopper

GRAPHICS

Adobe Illustrator, InDesign, Photoshop, and Premiere Pro

FIELD METHODS

Topographic Surveying

LANGUAGES

English (Fluent)

Spanish (Native Speaker)

French (Formerly Fluent)

SELECTED MEDIA COVERAGE

STORMWATER WETLANDS

- 2018 *Landscape Architecture Magazine*. “Shapes of Water.” October Issue.
- 2018 *The Dirt, American Society of Landscape Architects*. “MIT Researchers Seek Optimal Form of Urban Stormwater Wetlands.” May 23.
- 2018 *MIT News*. “A Solution for Urban Storm Flooding.” July 12.
- 2018 *Civil + Structural Engineer*. “Interdisciplinary Approach to Urban Storm Flooding.” September 1.
- 2018 *World Landscape Architecture*. “MIT Team Release Design Guidelines as a Solution for Urban Storm Flooding.” July 30.
- 2016 The White House, Office of the Press Secretary. “Fact Sheet: Working Together to Build a Sustainable Water Future.” March 22.