



Biophilic Region Framework 2026 RRBC Annual Conference | Sept. 30





Presentation Outline

1. Biophilic City Concepts
2. RK Mellon Urban Nature Framework
3. Focus on Charlottesville Region
4. TJPDC STEW-MAP Workshop
5. Biophilic Region Framework

the biophilia hypothesis

“the passionate love of life and of all that is alive” that resides within all of us (Erich Fromm 1964)

“the innately emotional affiliation of human beings to other living organisms. Innate means hereditary and hence part of ultimate human nature” (E.O. Wilson 1984)

the inclination to affiliate with the natural world is a “weak genetic tendency” that can atrophy if the built environment is not intentionally designed to facilitate a connection to nature (Stephen Kellert 2018)



the biophilic city defined

A biophilic city is a green city, a city with abundant nature and natural systems that are visible and accessible to urbanites. It is certainly about physical conditions and urban design – parks, green features, urban wildlife, walkable environments – but it is also about the spirit of a place, its emotional commitment and concern about nature and other forms of life, its interest and curiosity about nature, which can be expressed in the budget priorities of a local government as well as in the lifestyles and life patterns of its citizens. (Beatley 2011, 17)



qualities of the biophilic city

Biophilic City Conditions and Infrastructure

- + Easily accessible and abundant nature
- + Rich, textured, multisensory environments
- + Inspired by and mimic nature
- + Exhibition of the shapes and forms of nature

Biophilic City Activities

- + Celebration of city's unique nature and biodiversity
- + Active engagement by citizens involved in enjoying, watching, and participating in the nature around them
- + Encouragement for residents to connect with nature
- + Connection to climate

Biophilic City Attitudes and Knowledge

- + Residents knowledgeable about the biodiversity and nature around them
- + Residents with a deep sense of the natural history of the city and region
- + Prioritization of ecological restoration and repair

Biophilic City Institutions and Governance

- + Investment in the institution and infrastructure necessary to educate and foster connections to nature, near and far
- + Connected to the larger environment and bioregion
- + Work to protect nature beyond the city's border

The Biophilic Cities Network

a global network of cities, organizations, and individuals working collectively to nurture flourishing nature within the unique and diverse ecosystems and cultures of cities



Partner Cities

It is our belief that every city is biophilic to some degree, and has the potential to become a more biophilic city, and that realizing that potential will require intentional changes in some municipal and urban planning and design policies and practices to produce richer, more vibrant nature-filled cities of the 21st century. The Biophilic Cities Network is comprised of cities from around the globe dedicated to improving the connection between residents and urban nature.

PARTNER CITIES MAP



ARLINGTON



AUSTIN



BARCELONA



BIRMINGHAM



BUSAN



CHARLOTTESVILLE



COLOMBO



CURRIDABAT



EDINBURGH



EDMONTON



FREMANTLE



KANSAS CITY



KARŞIYAKA (IZMIR CITY)



LOS ANGELES



MIAMI-DADE



MILWAUKEE



NORFOLK



PANAMA CITY



PHOENIX



PITTSBURGH



PORTLAND



RALEIGH



RESTON



RICHMOND



SAN FRANCISCO



SINGAPORE



ST LOUIS



SWANSEA



TORONTO



VERONA



VISAKHAPATNAM



VITORIA-GASTEIZ

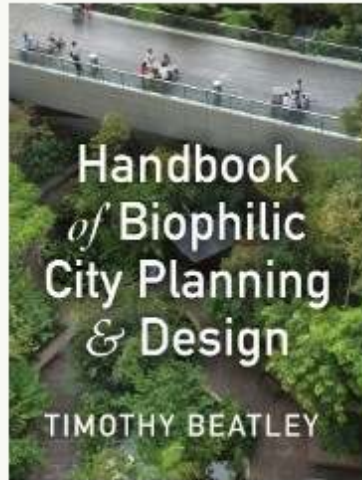


WASHINGTON, DC



WELLINGTON

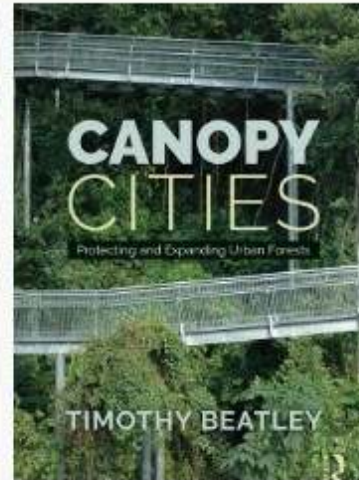
RESOURCES



Handbook of Biophilic City Planning & Design



Planning for Biophilic Cities



Canopy Cities



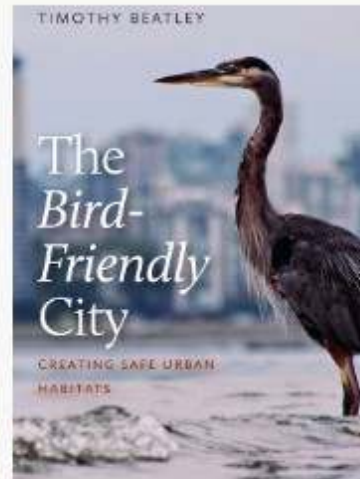
Cities4Biodiversity



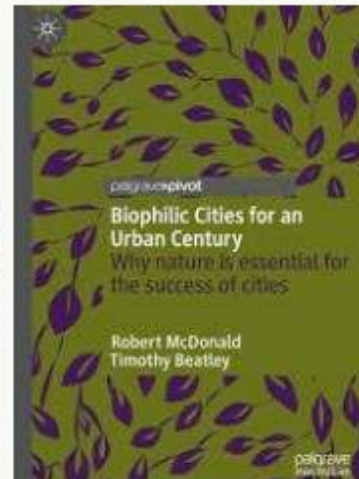
The Half Earth City



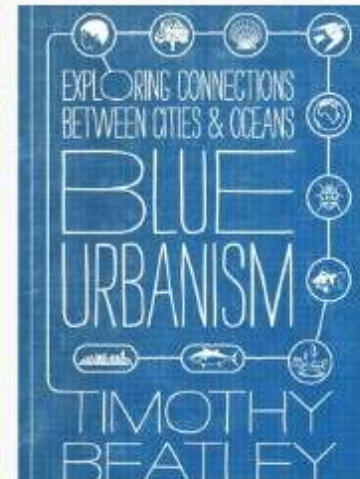
"Biophilic Cities" entry in Encyclopedia of Sust...



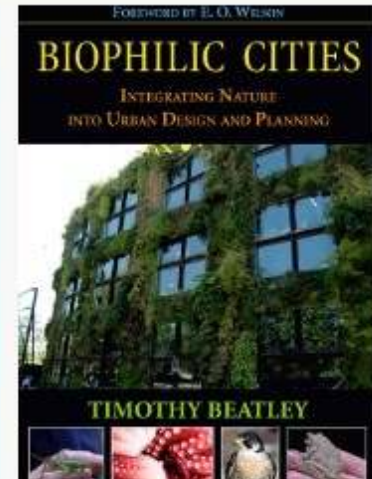
The Bird-Friendly City



Biophilic Cities for an Urban Century



Blue Urbanism

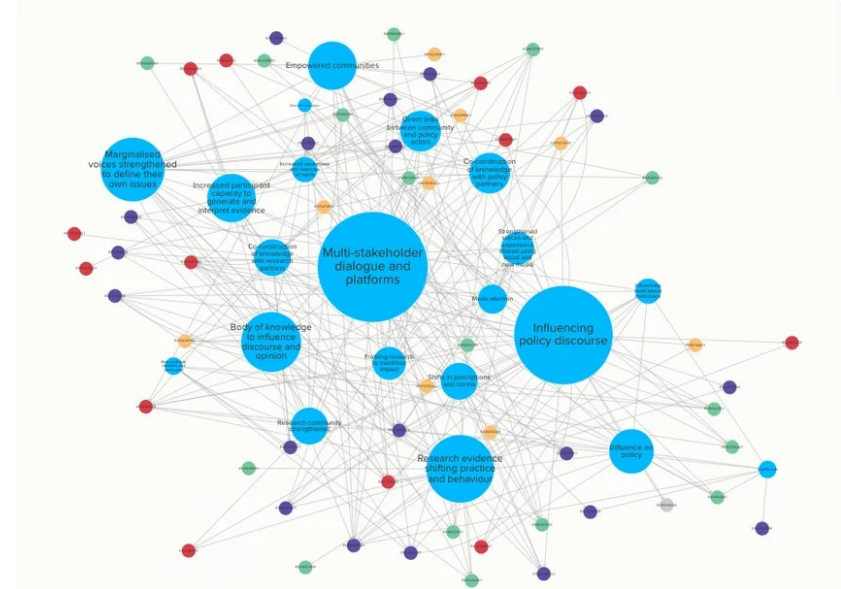


Biophilic Cities

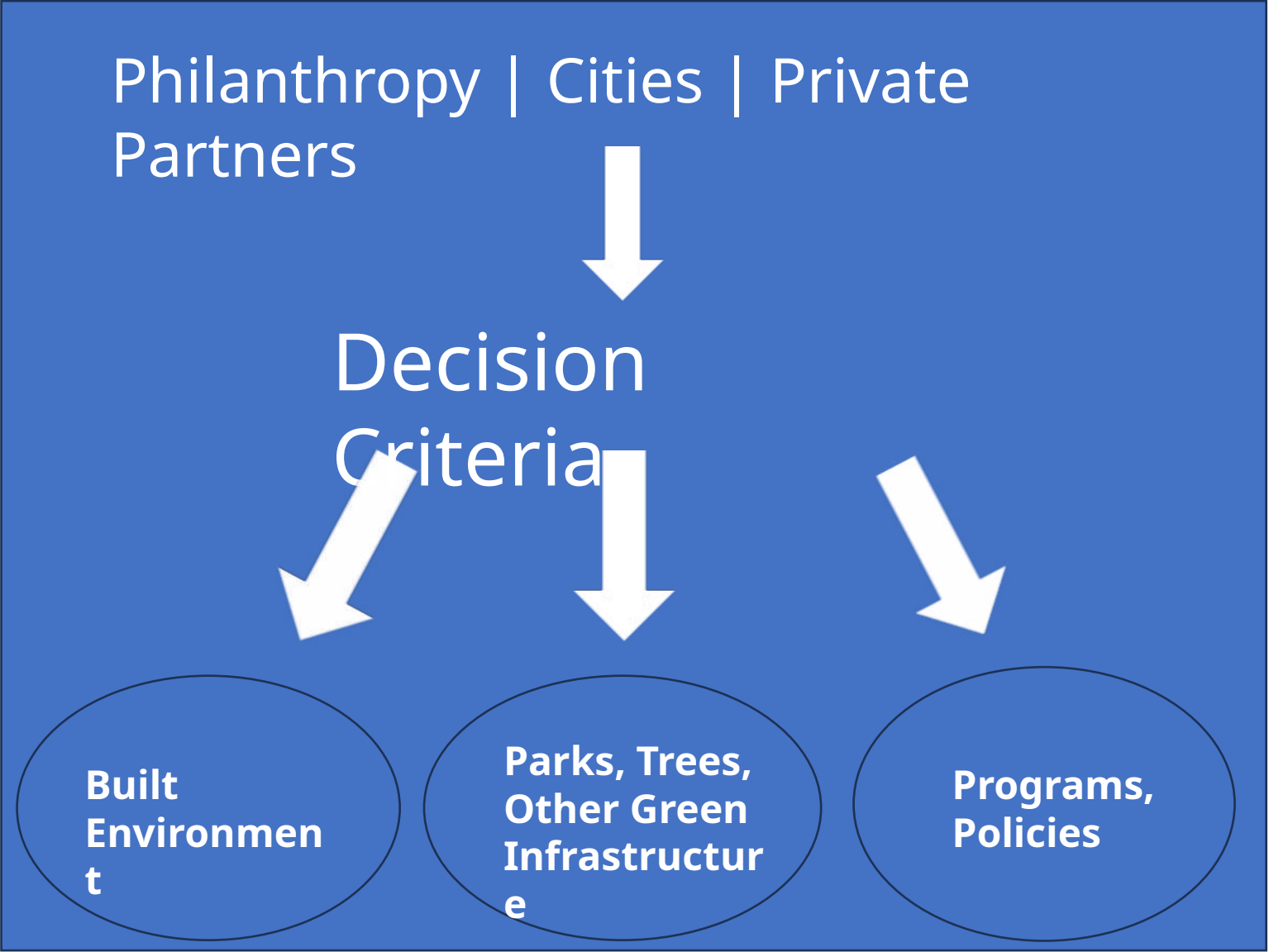


BiophilicCities

- Criteria from adopted plans and policies
- Survey of stakeholders
- In-person/virtual workshop sessions
- Stakeholder ecosystem mapping
- Database of stakeholders and their current projects
- Opportunities for continuing stakeholder collaboration



Decision-making Framework for Investments / Expenditures / Grantmaking



Decision
Criteria
Goals + Objectives

- Ecological connectivity
- Repurposing underused lands
- Equitable access to nature
- Land sharing
- Land sparing
- Social connectivity
- Technical development

Engagement

- Community designed
- Activating
- Capacity building
- Knowledge sharing

Impact Potential

- Innovative
- Transformative
- Scalable
- Multi-objective
- Multispecies
- Multijurisdictional
- Implementation of adopted plans and strategies
- Leveraging prior investment
- Incentivizing other investments
- Record of success
- Return on investment

Decision-making criteria?

Urban Rivanna River Corridor Plan Phase II

Livability: Coordinate both localities and other stakeholders, to foster a cleaner, safer, and more livable waterway;

Investment: Serve as a catalyst for future economic investment within the corridor;

Capital: Identify public capital in recreation facilities and infrastructure;

Policies: Inform any needed updates to City and County policies;

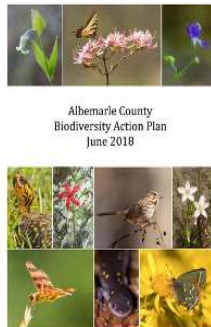
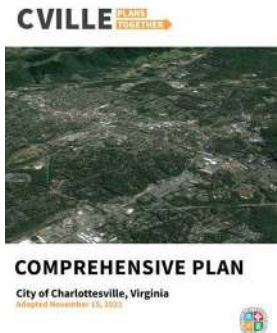
Laws: Identify needed changes in local ordinances and codes;

Programs: Guide the development of local programs designed to preserve environmental and historic river resources, while fostering future investment;

Cooperation: Improve cooperation between the City of Charlottesville and Albemarle County.

City Comp Plan Environment, Climate, And Food Equity Goals

1. Reduce greenhouse gases
2. Prepare for climate change adaptation and resilience
3. Protect, enhance, and restore the integrity of the city's water resources and riparian ecosystems.
4. Increase resilience and equitability of the local food system and urban agriculture, including access to healthy foods for all neighborhoods.
5. Pursue **healthy, interconnected urban ecosystems** that deliver valuable ecosystem services, and support diverse native plant communities and wildlife habitats.
6. Contribute to the creation, protection, and expansion of robust urban forests.
7. Improve citywide water efficiency.
8. Increase use of sustainable materials management to decrease environmental impacts.



Albemarle County Biodiversity Action Plan

GOAL 1: Recognize the importance of the three conservation focus areas. Prioritize conservation of the land and resources within them and, where possible, connections among them.

GOAL 2: Promote conservation easements for areas of important biological resources or physical landscape conditions.

GOAL 3: Conduct outreach and educate the public and landowners on the importance of preserving habitat areas and managing land wisely. Provide more opportunities and incentives for landowners to conserve biodiversity and other resources.

GOAL 4: Promote management of county-owned and other public lands in a manner that conserves and enhances biodiversity and other natural resources.

GOAL 5: Minimize or reduce habitat fragmentation county-wide and maintain habitat connectivity.

GOAL 6: Improve policies for subdivision of properties to help prevent habitat fragmentation and maintain parcels of sufficient size for agriculture and forestry.

GOAL 7: Reduce the impact of rural roads and other fragmenting features on habitat.

GOAL 8: Manage invasive species to limit their spread.

GOAL 9: Develop strategies for biodiversity conservation during climate change.

GOAL 10: Identify, restore, and protect large forested areas.

GOAL 11: Maintain feasibility of deer hunting by humans as a means of promoting forest regeneration.

GOAL 12: Identify and protect xeric habitats.

GOAL 13: Identify, restore, and protect prairie and savanna habitat.

GOAL 14: Improve county stream and river buffers to improve aquatic ecosystem health, water quality, and riparian habitat quality.

GOAL 15: Identify, restore, and protect wetlands.

GOAL 16: Protect and restore urban streams.

GOAL 17: Protect the Rivanna River and adjacent ecosystems.

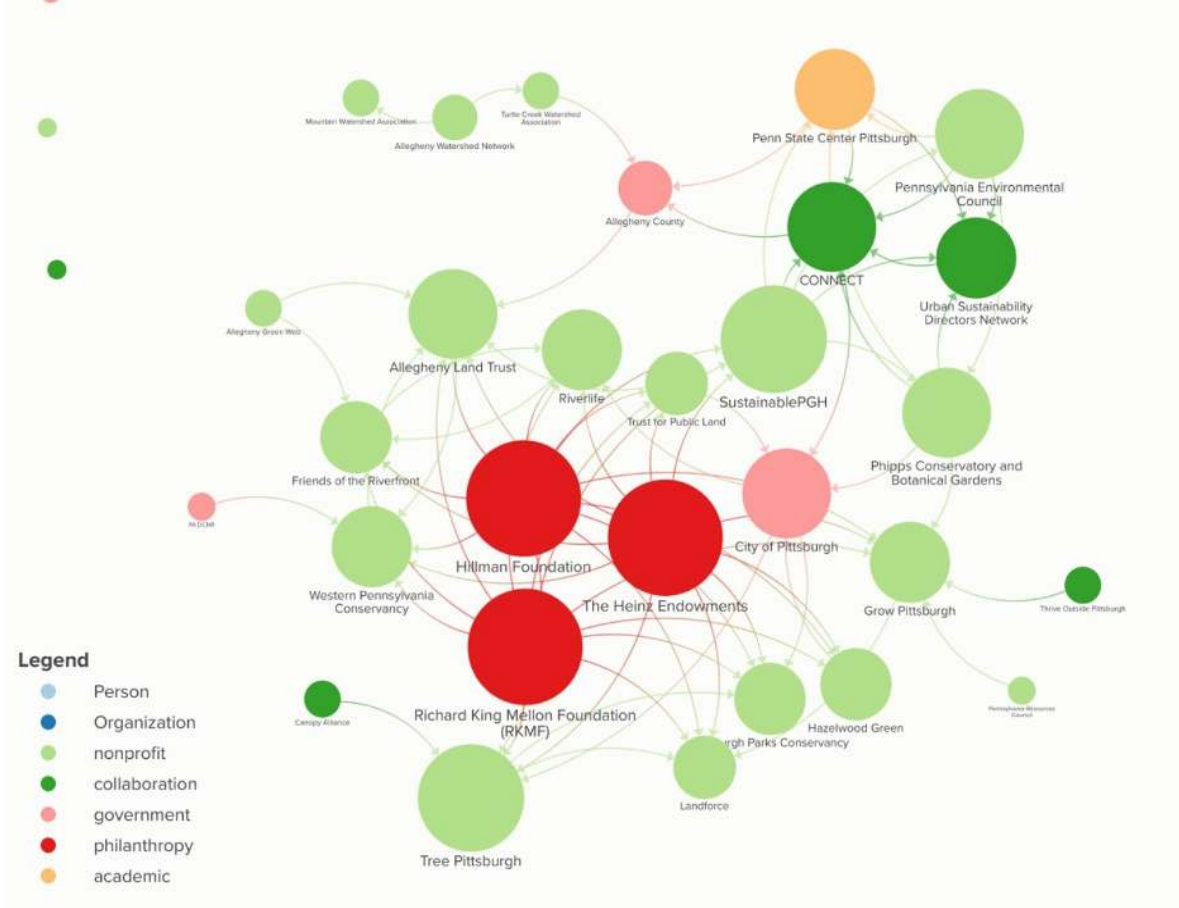
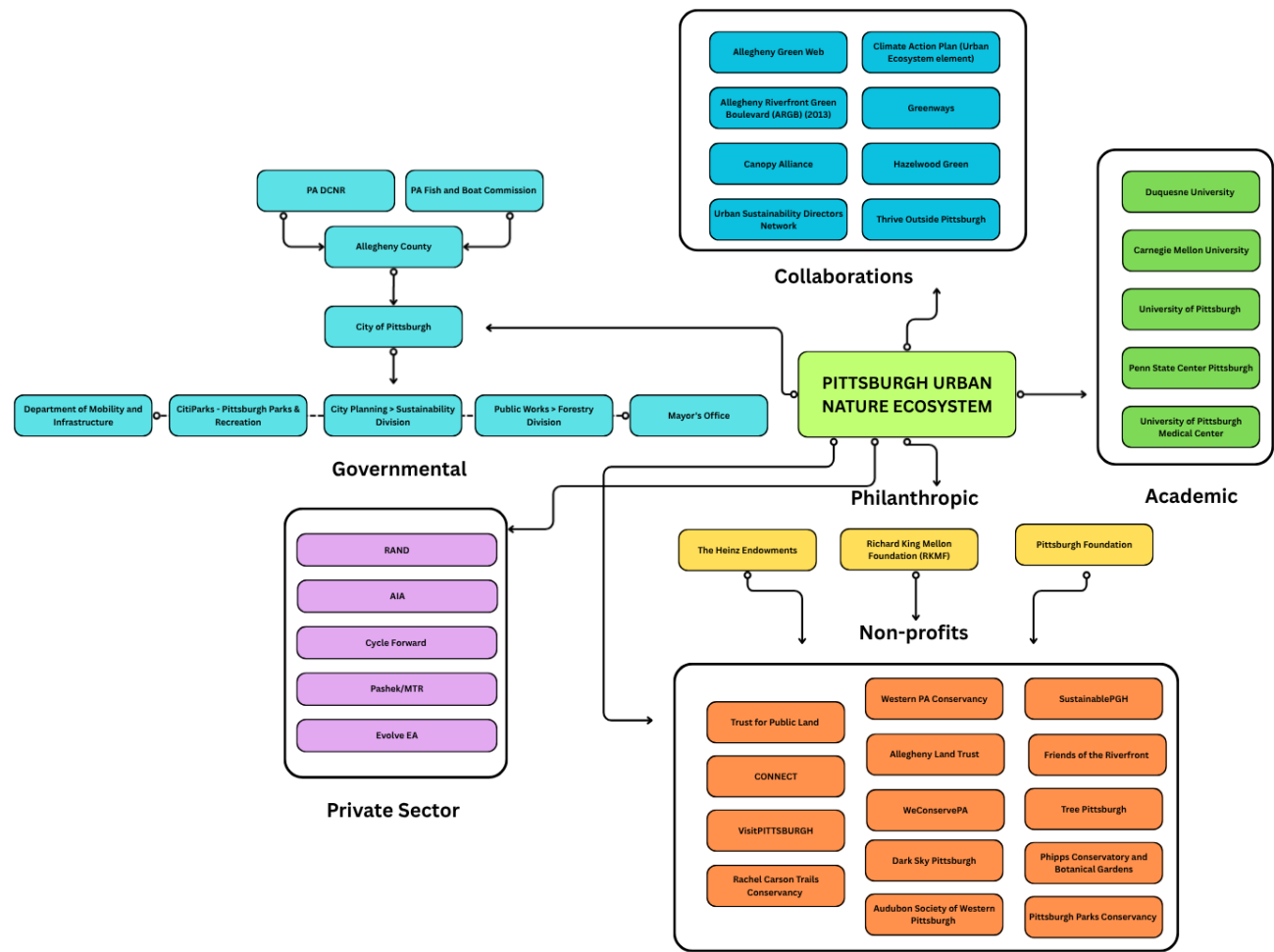
GOAL 18: Clean up and reuse potentially contaminated sites with bioremediation and natural habitat restoration.

GOAL 19: Promote the use of locally native plants in developed areas.

GOAL 20: Educate the public on the importance of biodiversity and ways to protect it.

GOAL 21: Develop indicators and monitor data that reflect the state of biodiversity in Albemarle County.

Urban Nature Stakeholders



How do these organizations interact?

What are shared goals and priorities?

Case Study- Rain Reclaim: Vacant Lots to Green Stormwater Infrastructure

- Converts vacant lots into green stormwater infrastructure to address flooding, sewer overflows, and water quality
- Data-driven site selection informed by community engagement
- Creates co-benefits: stormwater management, green space, recreation, neighborhood revitalization, and climate resilience
- Establishing financing, maintenance, and governance systems for future expansion.



Opportunity: Invest in multifaceted nature-based systems with long-term capacity

Expand this pane for information about the TJPDC Stew MAP and how to use it

Stewardship Mapping and Assessment Project of the Thomas Jefferson Planning District (The City of Charlottesville, and Albemarle, Fluvanna, Greene, Louisa and Nelson Counties)

Stewardship Groups (in alphabetical order)
Contact Phone Number and Website where available.

Search...

Albemarle Facilities and Environmental Services
Charlottesville, VA
Contact: (434) 296-5816
Website: <https://www.albemarle.org/government/facilities-environmental-services/environmental-services>

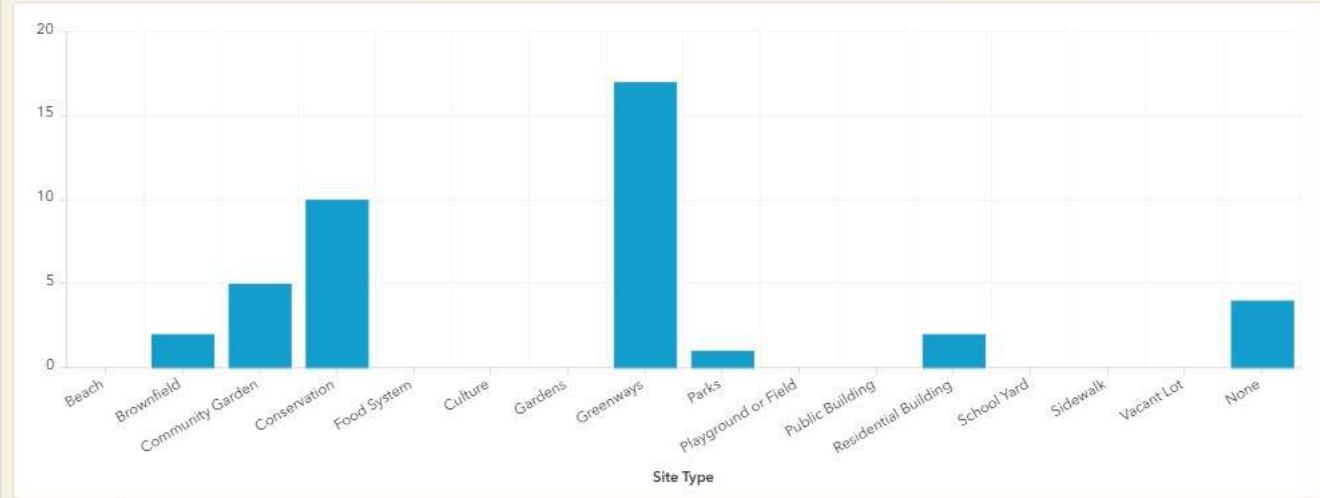
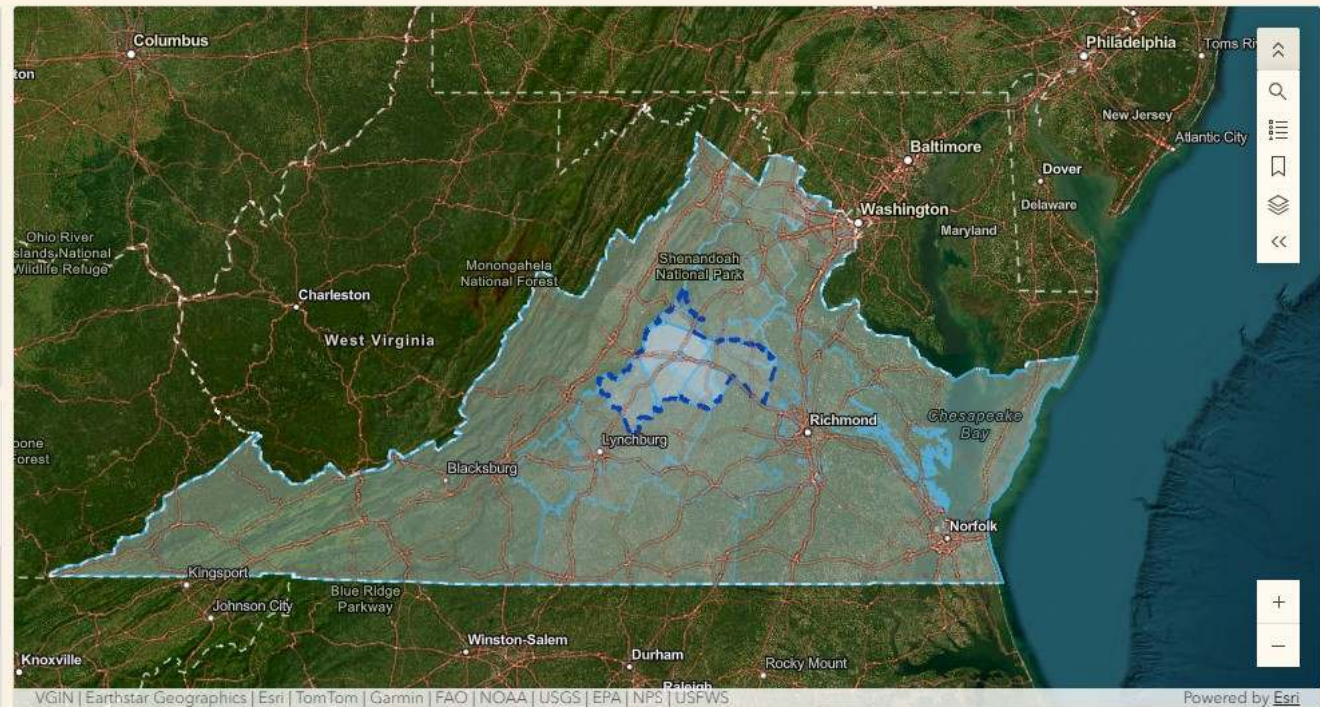
Albemarle Parks and Recreation
Charlottesville, VA
Contact: (434) 296-5844
Website: albemarle.org/parks

American Climate Partners
Orange, VA
Contact: (540) 672-2542
Website: <https://americanclimatepartners.org/>

Appalachian Voices
Charlottesville, VA
Contact: N/A
Website: <https://appvoices.org/>

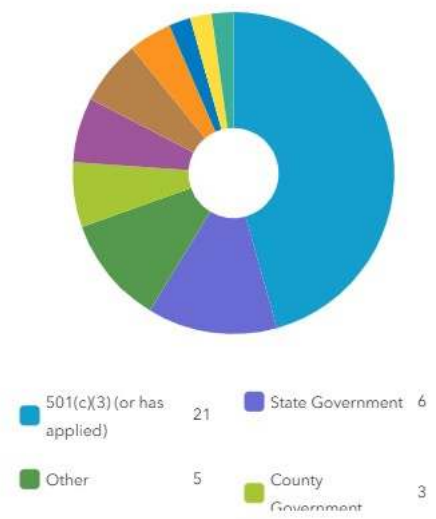
Central Blue Ridge Chapter Virginia Master Naturalists
Lovingston, VA
Contact: N/A
Website: www.VirginiaMasterNaturalist.org

Central Virginia Land Conservancy
Lynchburg, VA
Contact: (434) 843-4330

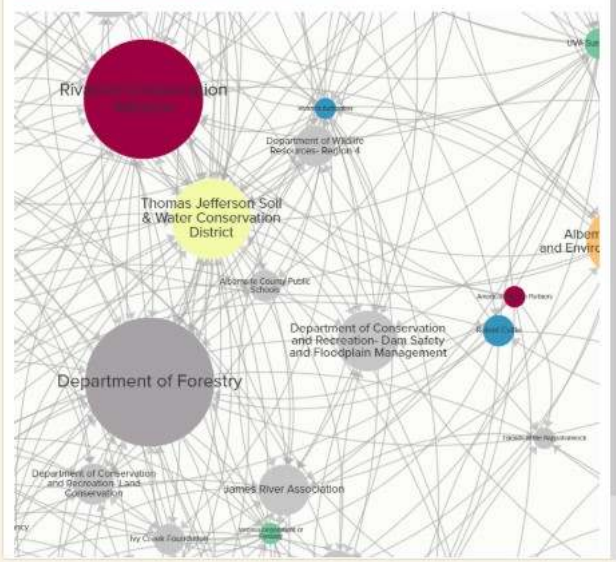


Site Type	Service Type	Focus
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Types of Groups



TJPDC Collaboration Networks
[Explore the Interactive Network Diagram](#)



NAVIGATING THE STEW-MAP TJPDC

A step-by-step guide to using the dashboard.

Why update STEW- MAP?

Current	Update
General Service Areas (Stewardship Turf)	Stewardship Turf as well as Specific Stewardship Sites
Limited Context	Expanded Data Layers
2023 Stewards	2023 & 2026 Stewards
	Identifies local funding priorities to align with funders





STEW-MAP Survey
arcg.is/0nTO5v0

Stewardship Mapping and Assessment Project (STEW-MAP)

Connecting the Biophilic Region

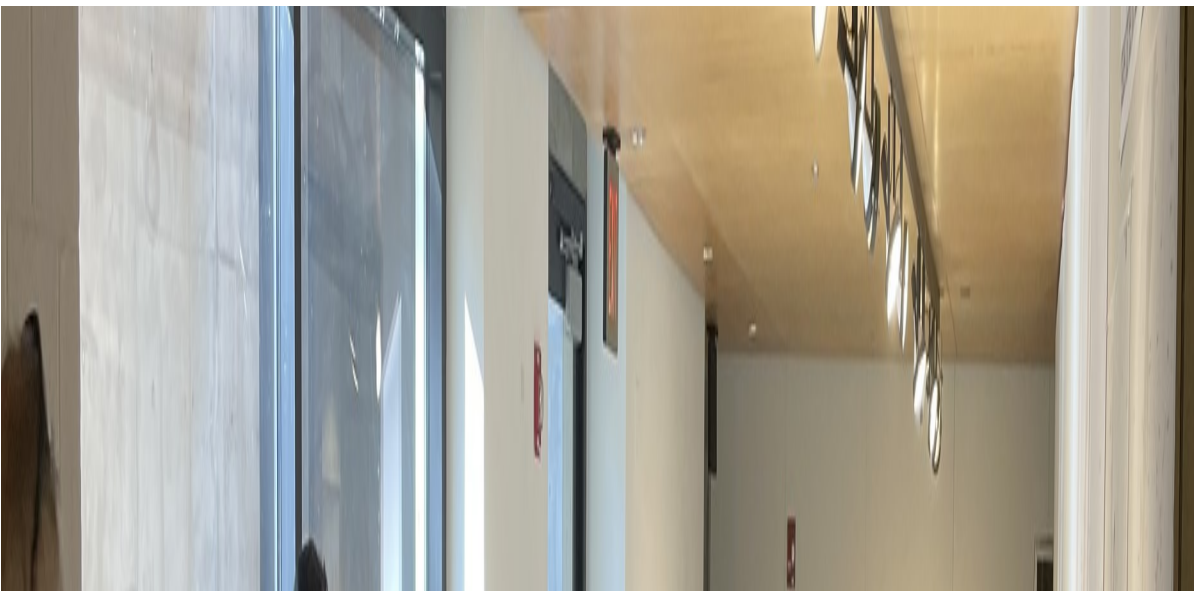
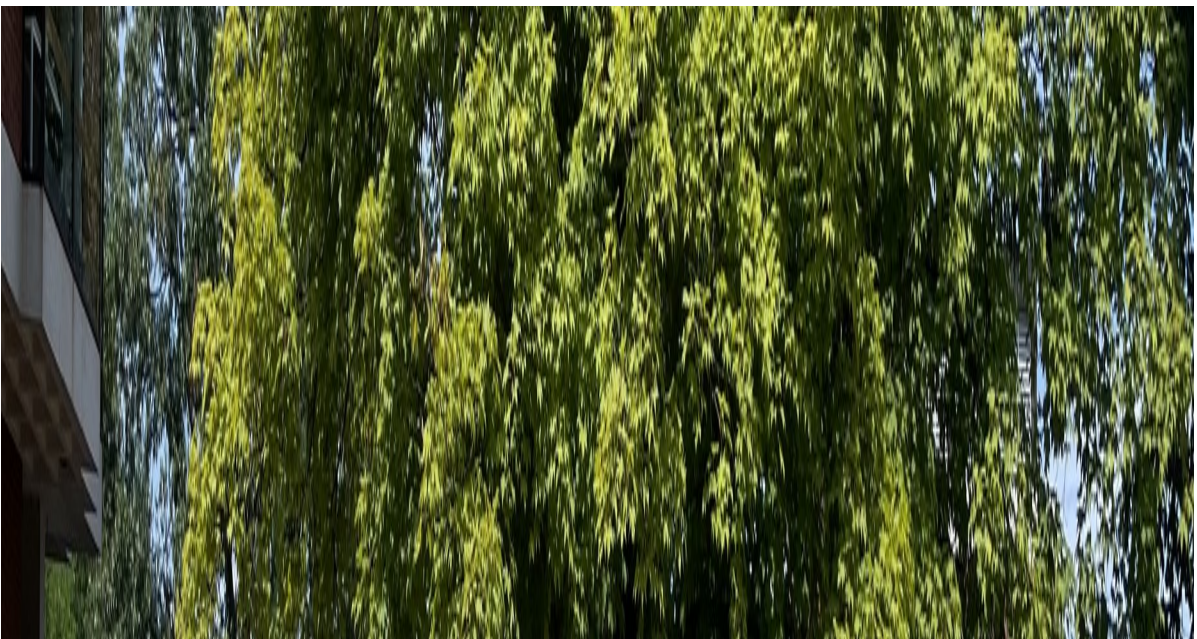
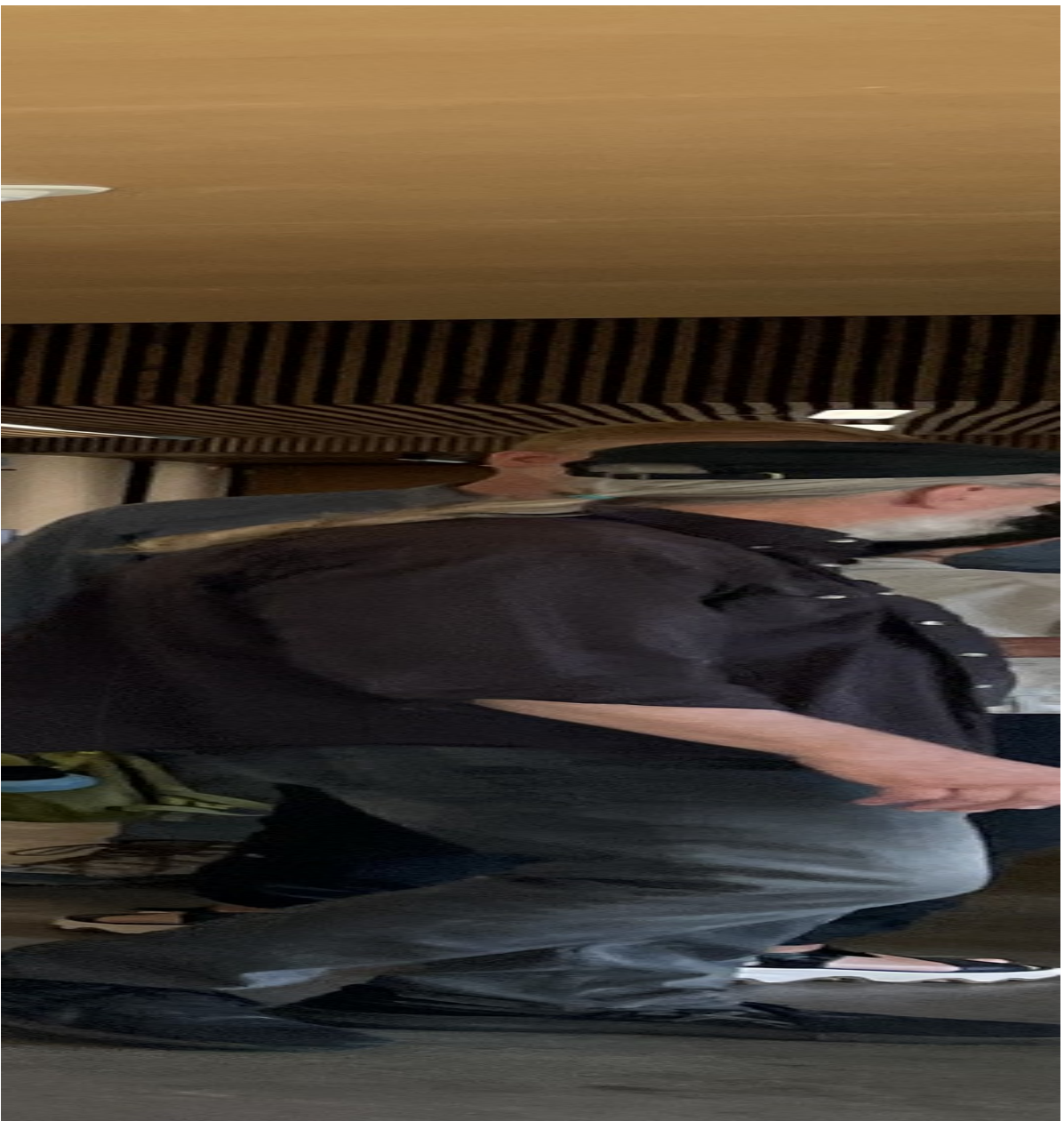
Your responses to this section will inform the creation of a decision-making framework to help funders effectively support urban nature initiatives. Biophilic Cities, housed at UVA, is developing the framework with funding from the Richard King Mellon Foundation. With insights from a range of stakeholders, the project aims to learn about collective priorities, funding opportunities, and how decisions to fund urban nature projects are currently made and should be made in the future.

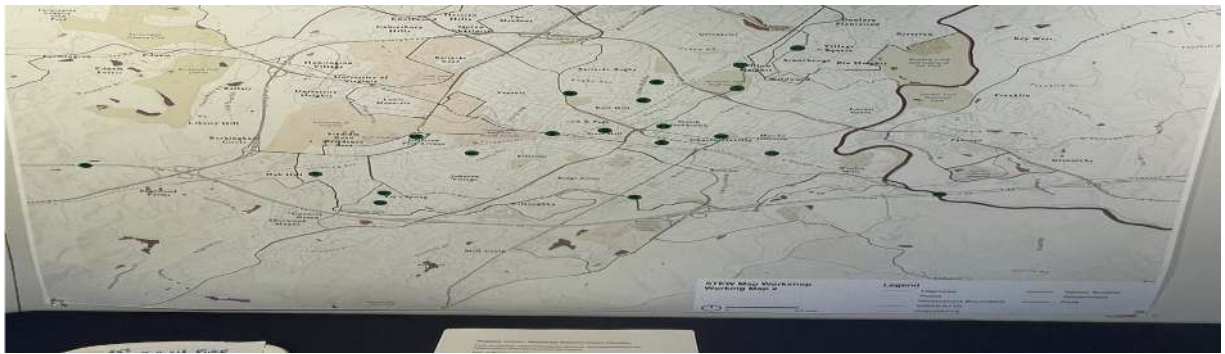
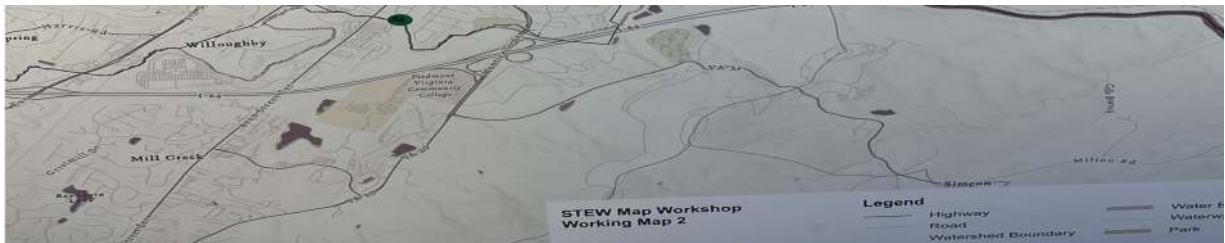
**What do you see as critical urban nature priorities in your city or county?
Select up to 3 that apply.**

What criteria should funders use to evaluate the funding requests?

For each of the following criteria, please indicate the importance of the criteria along the spectrum of "not considered" to "extremely important."

What procedural steps should funders prioritize to determine what to fund? Select up to 3 that apply.







Summary of Priorities for Stewardship

Tree Canopy and Forest Conservation

- Preservation of mature trees
- Canopy loss from development
- Low-canopy neighborhoods
- Forest connectivity
- Conservation of large forest blocks

Biodiversity and Habitat Protection

- Biodiversity hotspots
- Wildlife corridors
- Core forests
- Invasive species
- Watershed health
- Habitat fragmentation

Water Resources and River Health

- Rivanna River stewardship
- Riparian restoration
- Watershed health
- Reservoir access
- Public river access
- Stream clean-up efforts

Community Engagement and Education

- Environmental education
- Youth engagement
- School partnerships
- Volunteer recruitment
- Public awareness efforts
- Connecting stewardship to everyday community needs

Summary of Workshop STEW-MAP Recommendations

Make STEW-MAP More User-Friendly and Action-Oriented

- Clear explanations of STEW-MAP's purpose and audience
- Better hierarchy and visual organization
- Cleaner interface with less clutter
- Mobile-friendly design
- Filters for stewardship focus areas
- Guided user experiences based on interests or goals
- Include action-oriented prompts

Position STEW-MAP as a Collaboration Hub

- Current stewardship opportunities
- Volunteer recruitment tools
- Community calendars
- Funding opportunity listings
- Organization contact information
- Resource-sharing opportunities
- Project collaboration visibility
- Identification of organizational needs and capacities

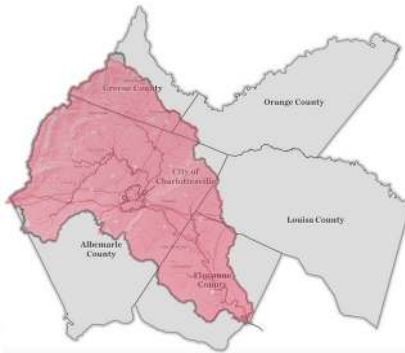
Add Ecological and Land Use Context

- Ecological Data (tree canopy, wildlife and riparian corridors)
- Land Use and Planning Data (zoning, future land use)
- Community and Equity Data (heat islands, social vulnerability)

Biophilic Region

Dr. Mona El Khafif
Associate Professor
Graduate Director for
Urban Design
University of Virginia (UVA)
School of Architecture

Contact:
me9gn@virginia.edu





Biophilic Cities

Co-organized by Natural Heritage Committee Albemarle County, Timothy Beatley + Mona El Khafif
Thursday 02.01.2024 | 6:30 PM | CAM 220 C

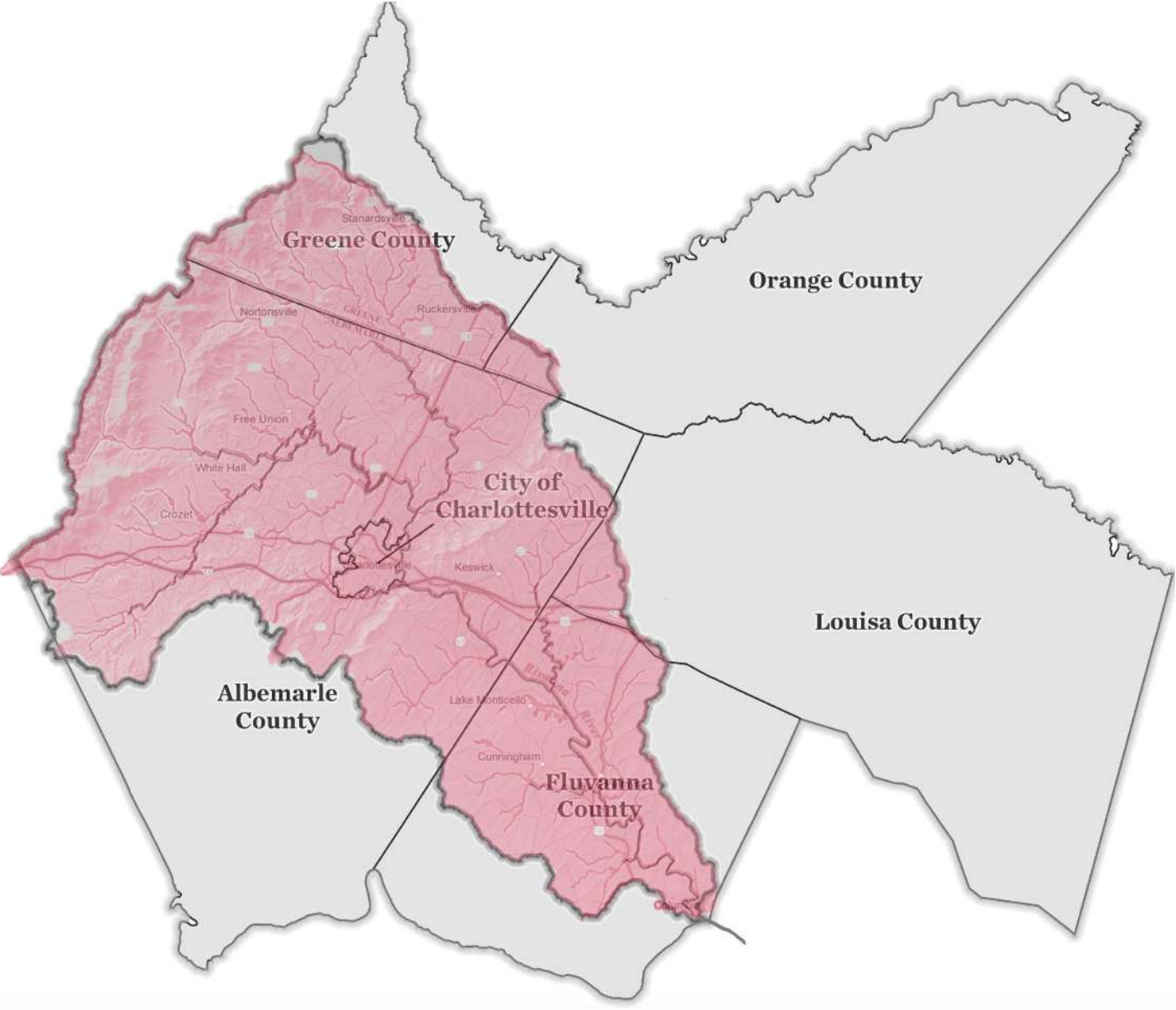
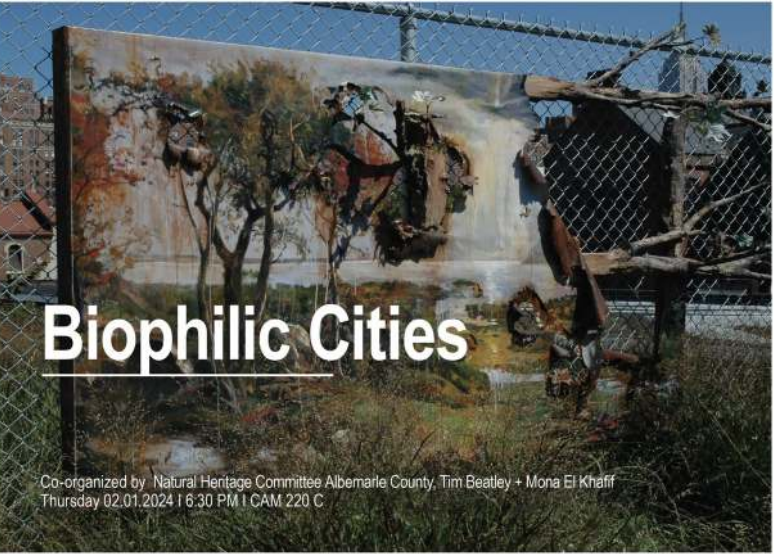


Image Credits: Map M. El Khafif, Photos: Rivanna River Conservation Alliance. <https://www.rivannariver.org/>





Assoc. Prof. Mona El Khafif

Biophilic + Cultural Landscapes (Team: Bethany Michels, Courtney Chalk, Di Wu)

While there are overlaps with other topic areas like sustainable development, recreation, and agriculture UVA's leadership in biophilic agendas needs to be called out in the context of our cultural history which was also adopted by other schools in the region. The concept of biophilic leadership at the University of Virginia (UVA) is closely related to Thomas Jefferson's original vision for the university which emphasized the importance of nature, reason, and harmony in education and daily life. Starting with the design of the Academical Village that defined the "lawn" as the centerpiece of the "grounds" UVA integrates biophilic principles into many parts of the institutional mission. From architecture to campus design, the integration of nature into learning, sustainability and stewardship, community engagement, and the principles of holistic education, UVA is a key player in the region if not nationwide.

Examples Projects:

- Estates (UVA Grounds, Monticello, Morven, James Monroe Highland)
- UVA Green Building Standards (UVA has adopted green building standards that require all new construction and major renovations to achieve at least LEED)
- UVA Carbon Neutrality Goal (UVA's commitment to carbon neutrality by 2030)
- Sustainable Transportation Initiatives (bike sharing, EV car-charging, Jaunt rural transportation)
- Morven Kitchen Garden (a one-acre, student-run farm to support dining halls)
- Delta Force Program (UVA's internal energy efficiency initiative)



Assoc. Prof. Mona El Khafif

Asset Analysis A1 Prompt:

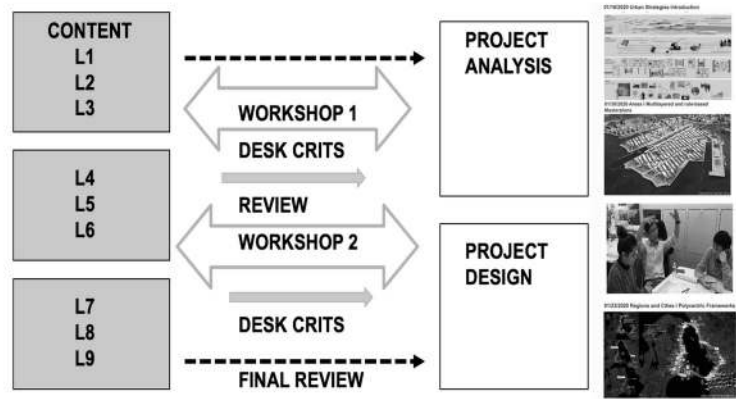
Sign up for a team and an umbrella topic. Start to compile material that consists of documentation, policies, statistics, and spatial information (ideally GIS layers). The material collection listed under 5 is a starting point but starts to generate an archive with links and additional sources. Start to map out your umbrella topic and analyze the spatial settings. Call out important cases or examples (at least one per group member) and integrate these into the master map. What are the different layers that are critical to your topic?

Questions to be considered:

- **Location, Size, and Sites//** Analyze the spatial setting and the extent of your assets. Where are they located? How are they connected? What are the boundaries? What will be their impact on existing ecosystems and communities? How large are they and what kind of biophilic attributes can you describe? What are the boundaries that apply?
- **Stakeholders and Engagement//** Who initiated the assets and who oversees maintaining and directing the assets of your umbrella topic? How are community stakeholders included and engaged?
- **Planning Regulations//** What are the current policies, guidelines, budgets, and restrictions of your umbrella topics?
- **Biophilic//** How is the asset addressing biophilic qualities? Be critical and while seeing qualities also take notes of how these can be improved in the future.
- **Precedents//** While we will look at precedents in more detail, start to take note of how other cities are maintaining and improving their biophilic assets.

Assoc. Prof. Mona El Khafif

ARCH/PLAN Urban Strategies Fall 2024 From Planning Frameworks to Temporary Tactics



Assoc. Prof. Mona El Khafif

Workshop 1 Agenda October 2nd

6:20 - 6:40 pm Welcome and Introduction (CAM 305)
6:40 - 7:10 pm First Round of Feedback (CAM 305 and 405)

- Biophilic + Recreation (Tim Padalino)
- Biophilic + Wildlife (Larry Garretson + Mona El Khafif)
- Biophilic + Agriculture (Tithi Sanyal)
- Biophilic + Water Conservation (Lisa Wittenborn)
- Biophilic + Land Conservation (JD Brown + Tim Beatley)
- Biophilic + Sustainable Development (Clayton Strange)
- Biophilic + Cultural Landscapes (Beth Meyer)

7:10 - 7:30 pm Break and opportunity to walk around

7:30 - 8:10 pm Second Round of Feedback (CAM 305 and 405)

- Open tables

8:10 - 8:30 pm Wrap-up and final discussion (CAM 305)

Assoc. Prof. Mona El Khafif



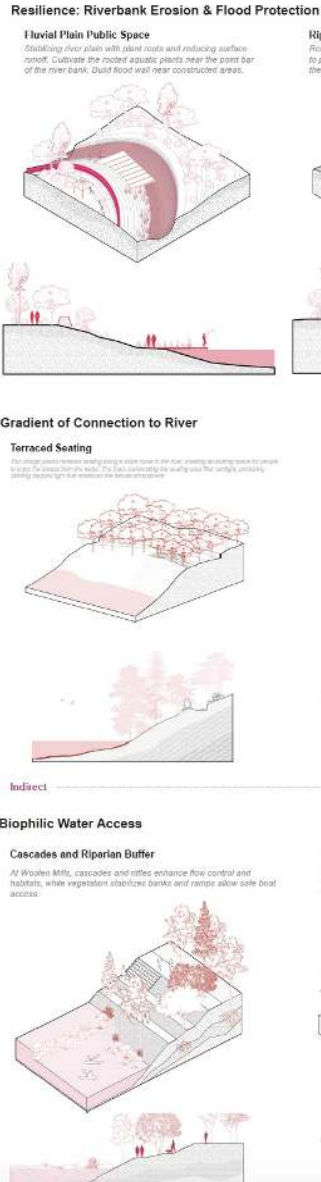
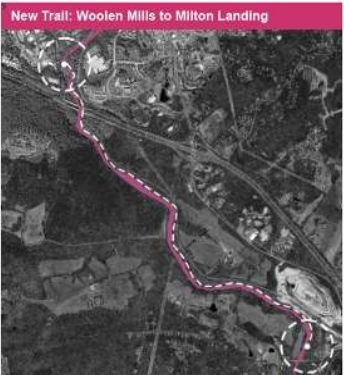
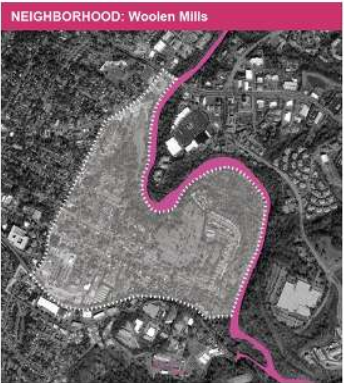
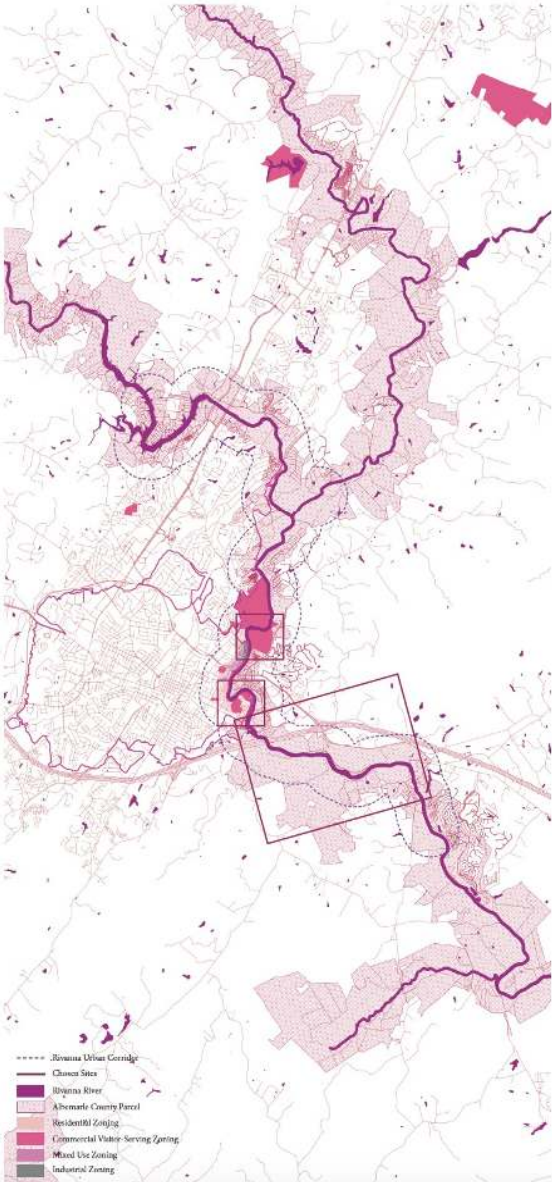
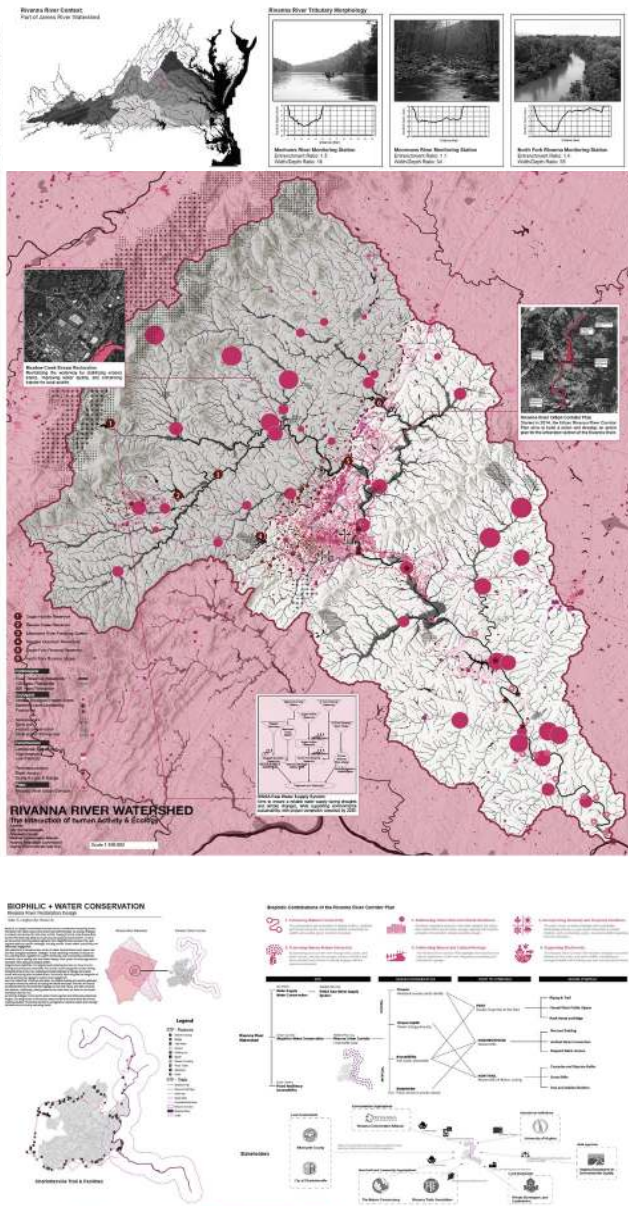
Assoc. Prof. Mona El Khafif

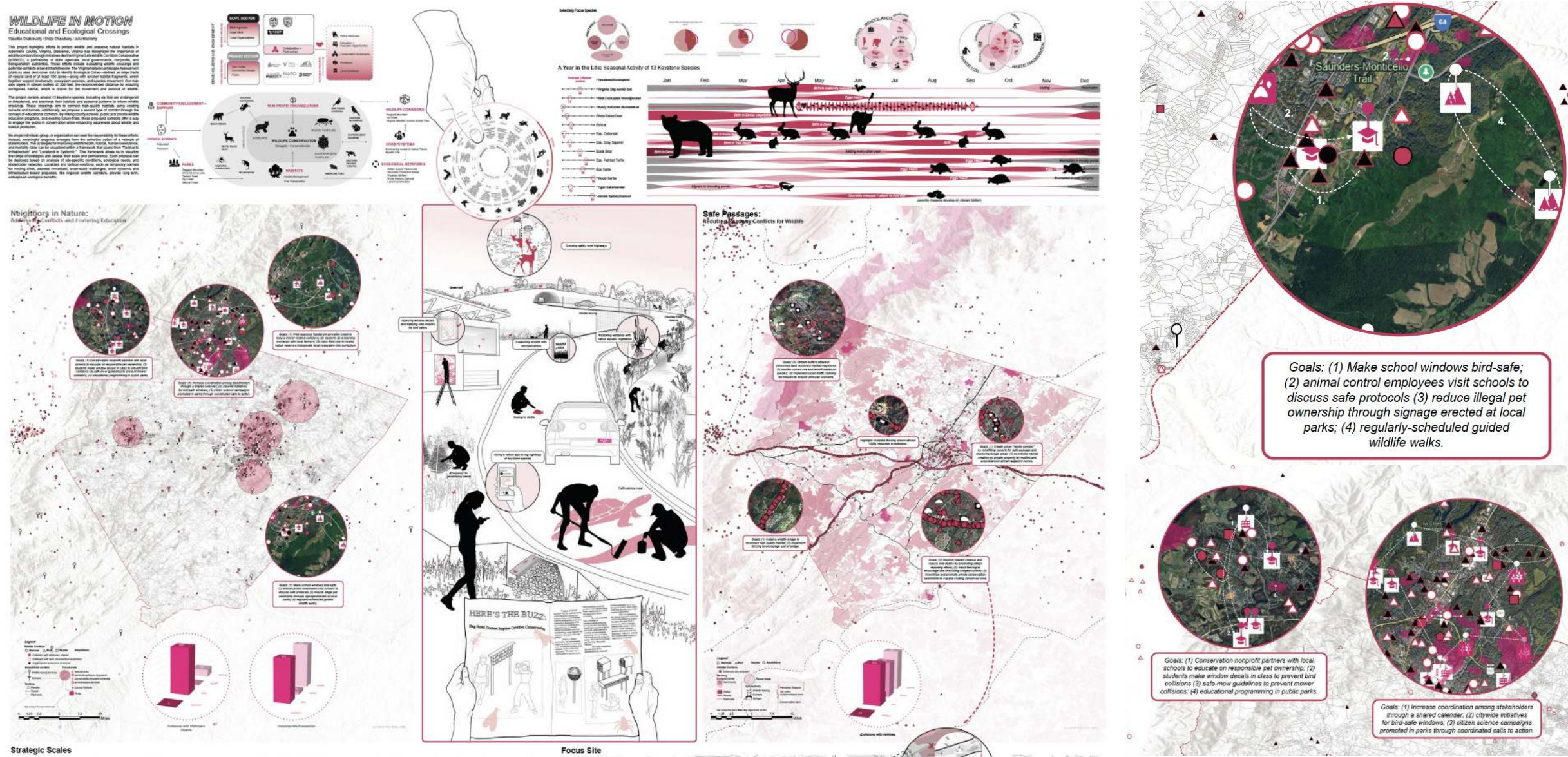
Asset Analysis

In drawing biophilic restoration, we are examining how Albemarle County and the City of Charlottesville derive recreation from the ecology and natural world. This question in mind, we are comparing the "biogeography" of parks and trail distribution between the County and the City through multiple parameters, such as size, service area, and ownership. Trails and parks of various scales, within both the administrative boundaries of Albemarle County and the City of Charlottesville, are our focus in this analysis. Four sites from various scales are picked as case studies in understanding what are some of the design strategies and interventions used in achieving the goals of greenway recreation. Two key constraints from our analysis are: fragmented parks and trails, and supply not meeting demand.

Location: [http://www.berkeley.edu/extension/](#)



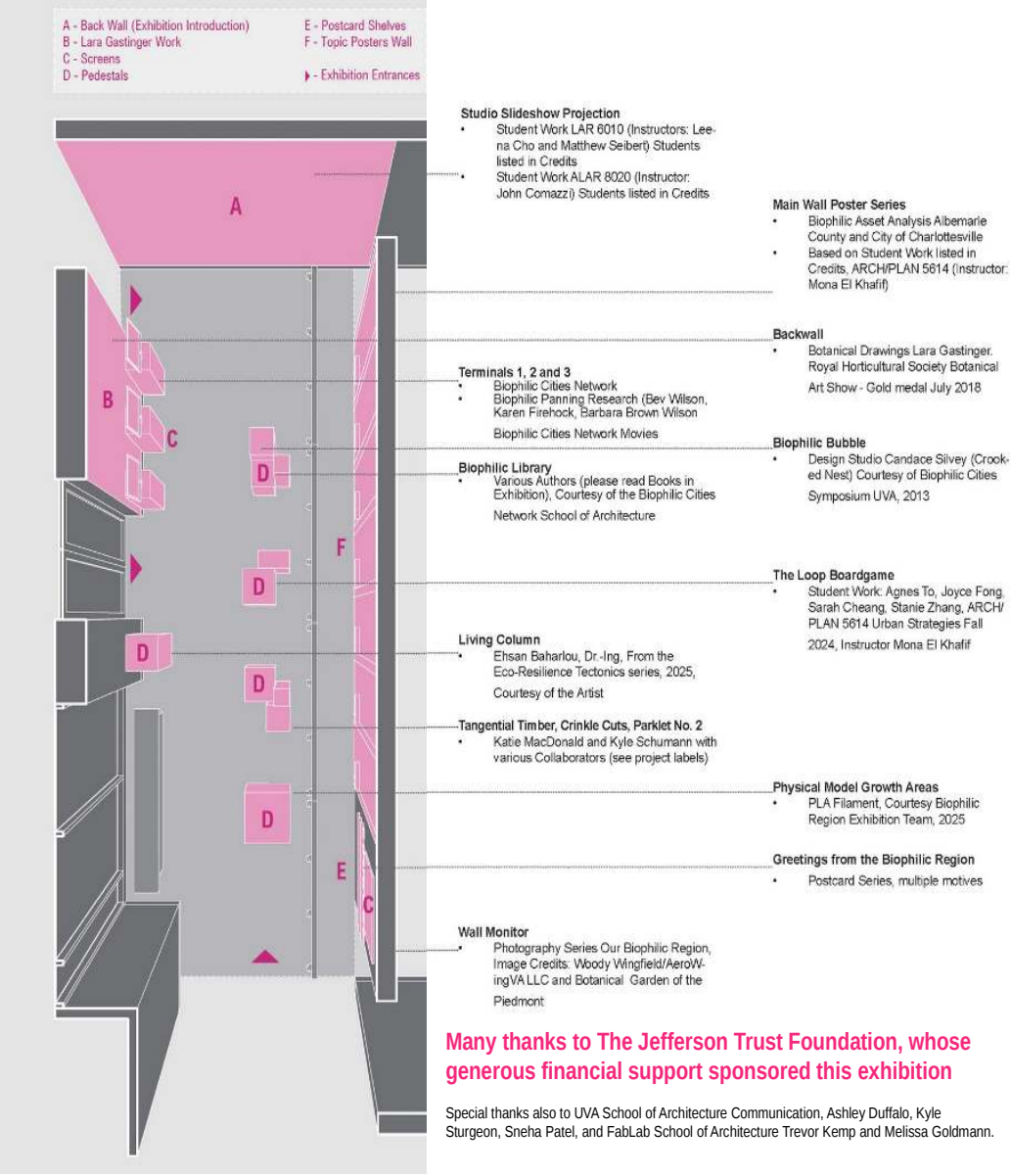




Identification of design strategies from the design of wildlife corridors to tactical educational strategies to allow communities to help with the reduction of roadkill. (role of the nominee: seminar instructor), Student credits: Students: Vasudha Chakravarty / Shiza Chaudhary / Julia MacNelly, Fall 2024



ARCH/PLAN 5614, UVA School of Architecture, Fall 2024, Instructor: Mona El Khafif, Students: Recreation: Joyce Fong, Agnes To, Sarah Cheang, Stanie Zhang, Wildlife: Shiza Chaudhary, Vasudha Chakravarty, Julia MacNelly, Water Conservation: Jacob Li, Liam Bai, Simin Liu, Agriculture: Emma Reed, Avery Edson, Paul Bourdin, Land Conservation: Matias Hendi, Gordon Miller, Katherine Shi, Sustainable Development: Jack Shin, Aileen Frazier, Aziza Longi, Cultural Landscapes: Bethany Michels, Courtney Chalk, Di Wu

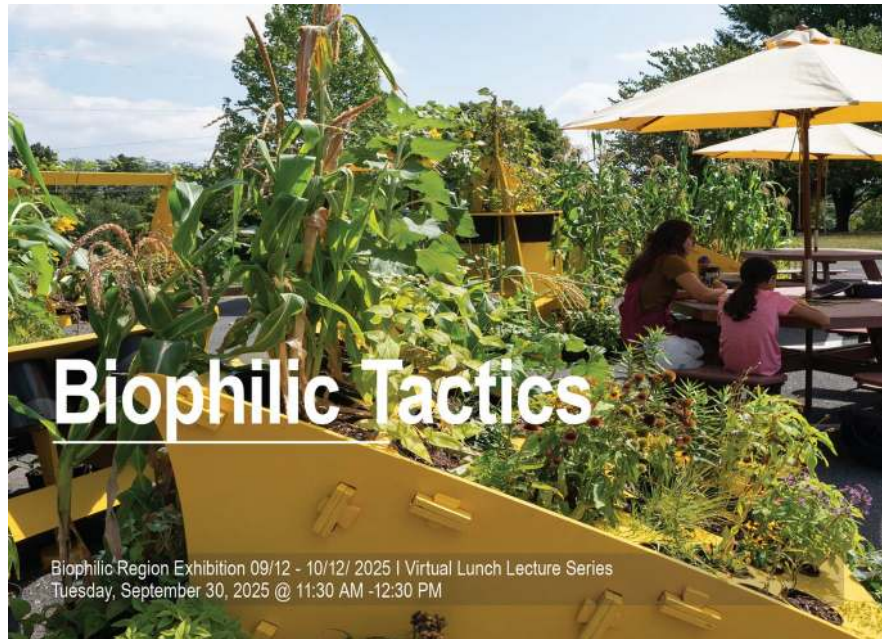


Biophilic Region Exhibition, 2025, UVA School of Architecture, Curatorial Team: Mona El Khafif, SRAs Summer 2025: Julia MacNelly, Joyce Fong, Katherine Shi, Image Copyright: Corbett Smithson and Tom Daly

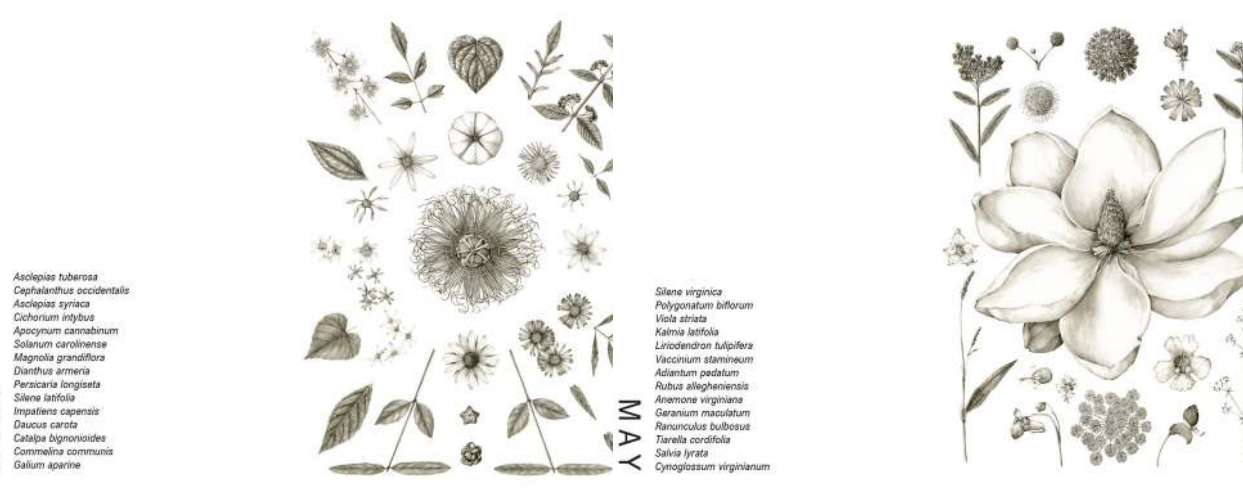
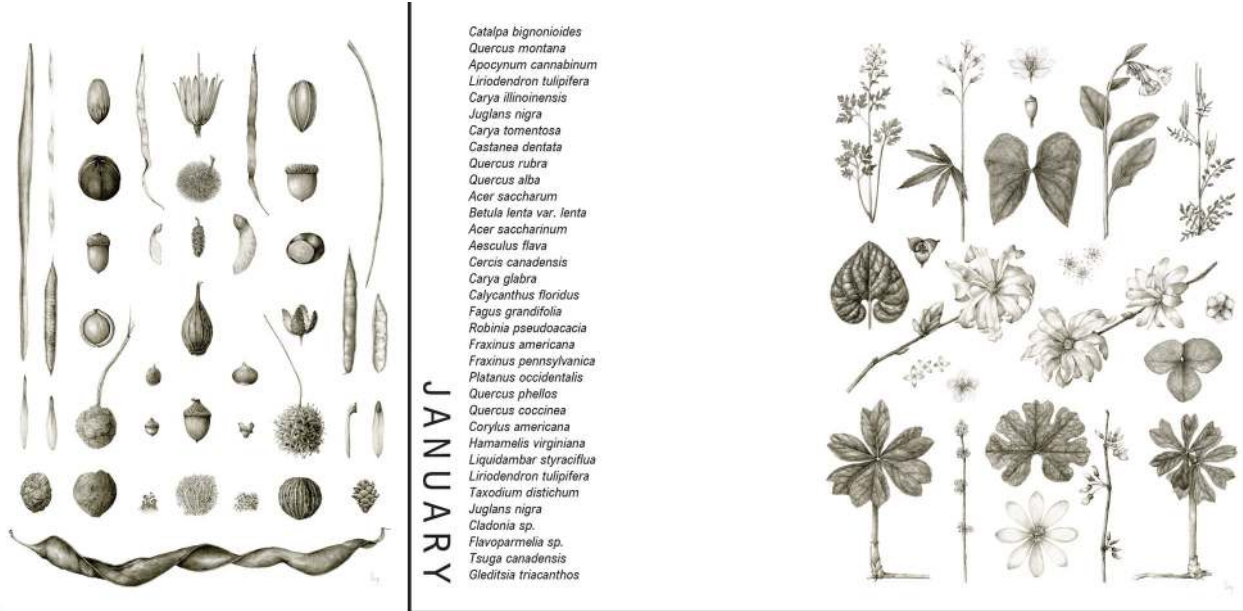


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Biophilic Region Exhibition, left: Copyright: Corbett Smithson, right: Lara Gastinger, “Seeing Plants – A Year in Virginia”, 2018 Gold Medal Royal Horticultural Society. <https://www.laracallgastering.com/>



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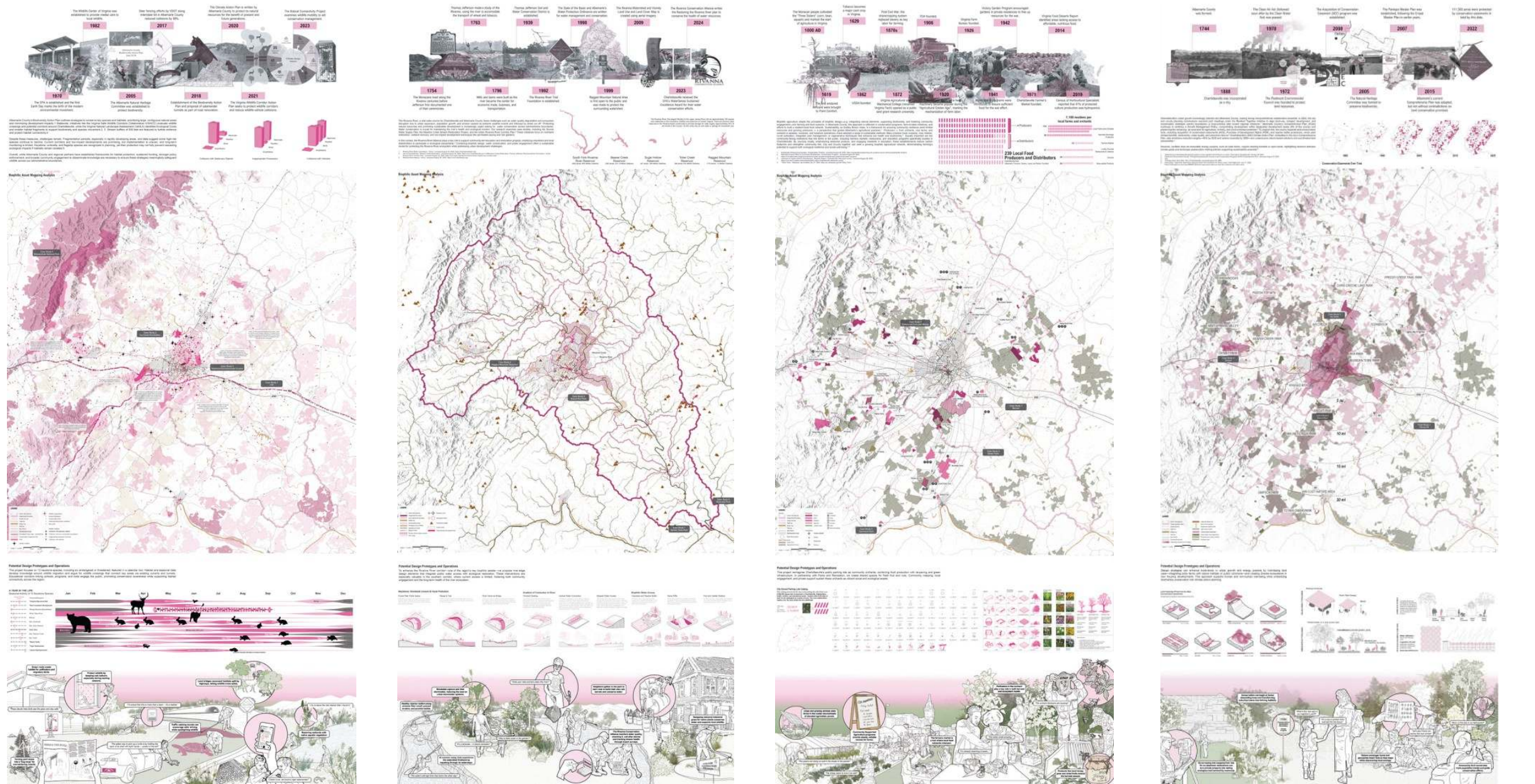
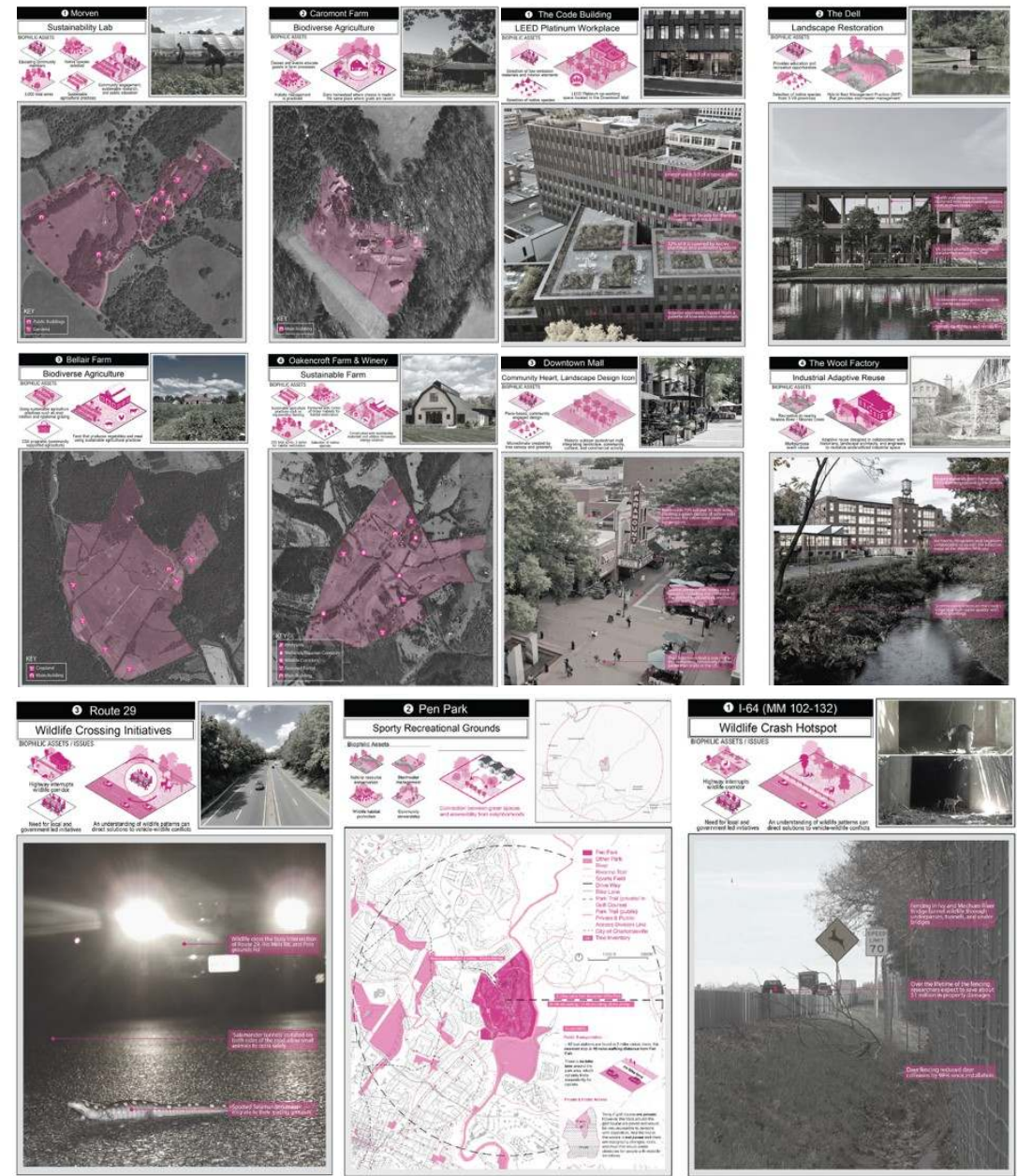
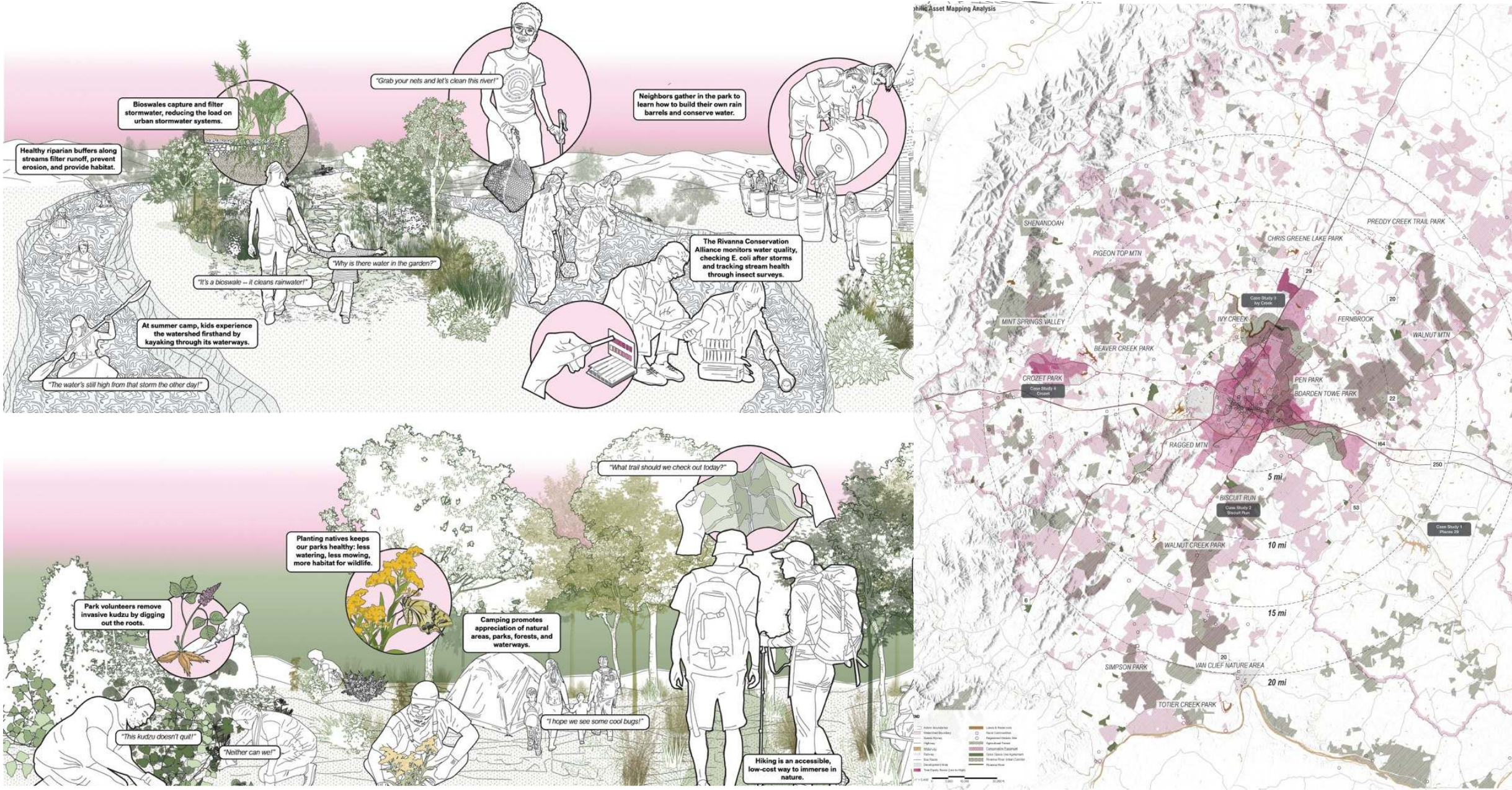


Image: Sample posters featuring the asset analysis addressing the seven criteria of a biophilic region. Each lens was presented by a timeline, an infographic, a cartography, design strategies, and annotated narrative drawings, Curatorial team: Mona El Khafif, SRAs Julia MacNelly, Joyce Fong, Katherine Shi, Cartographies: Joyce Fong



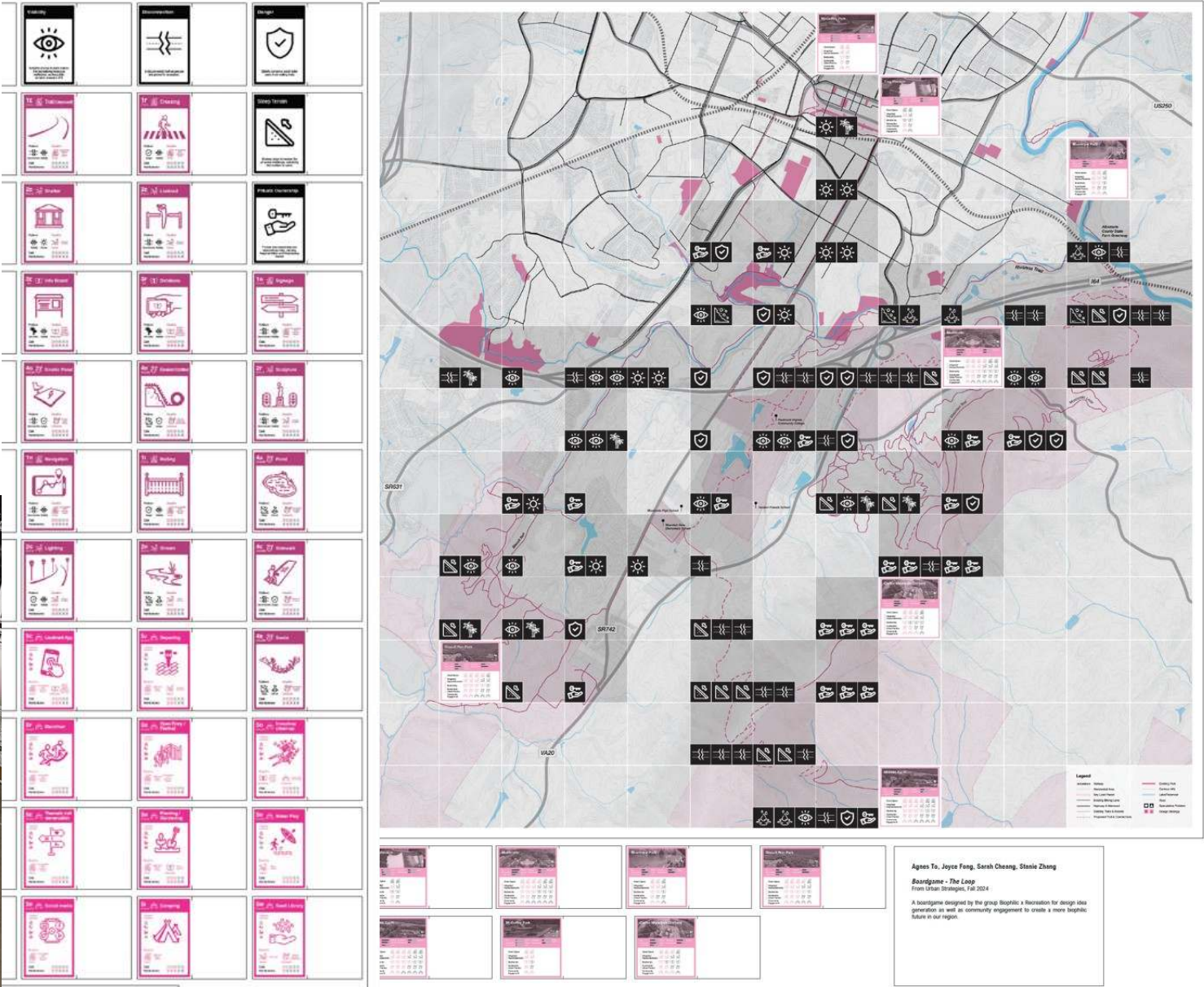
Biophilic Regino Exhibition 2025, Each asset analysis was accompanied by call out sites that were either a call for action to address gaps or an accomplishment. The exhibition featured 7x4 call out sites, Curatorial team: Mona El Khafif, SRAs Julia MacNelly, Joyce Fong, Katherine Shi, Image Credits: Mona El Khafif

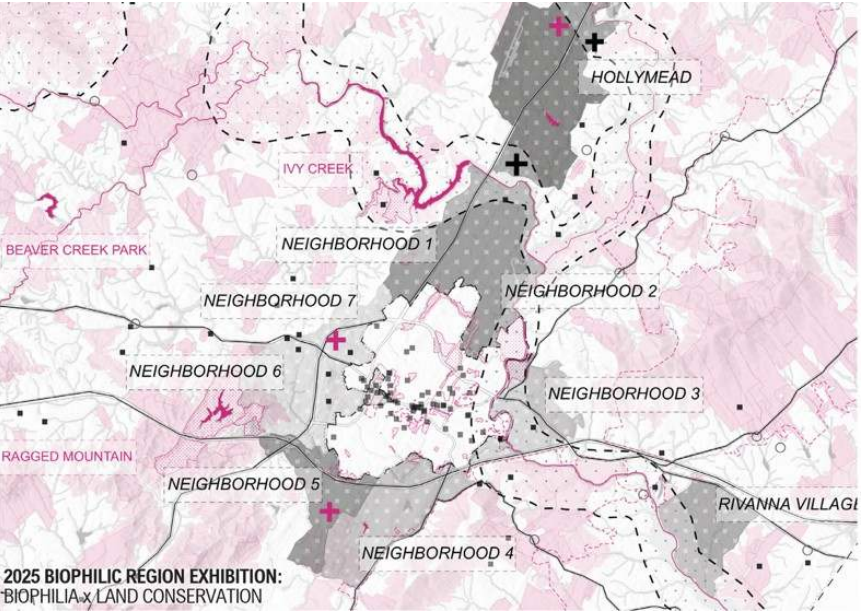


Biophilic Region Exhibition 2025, Image: Narrative Drawings (what we can do to preserve the Biophilic Region), Student credits: Julia MacNelly,



Biophilic Region Exhibition 2025, The Land Aggregation Game: This game strategy offers an opportunity to work together to repair our landscapes. Goal: Facilitate for a nature path and wildlife corridor from the city center to the edge of our region? Student Credits: Joyce Fong, Agnes To, Sarah Cheang, Stanie Zhang, Fall 2024



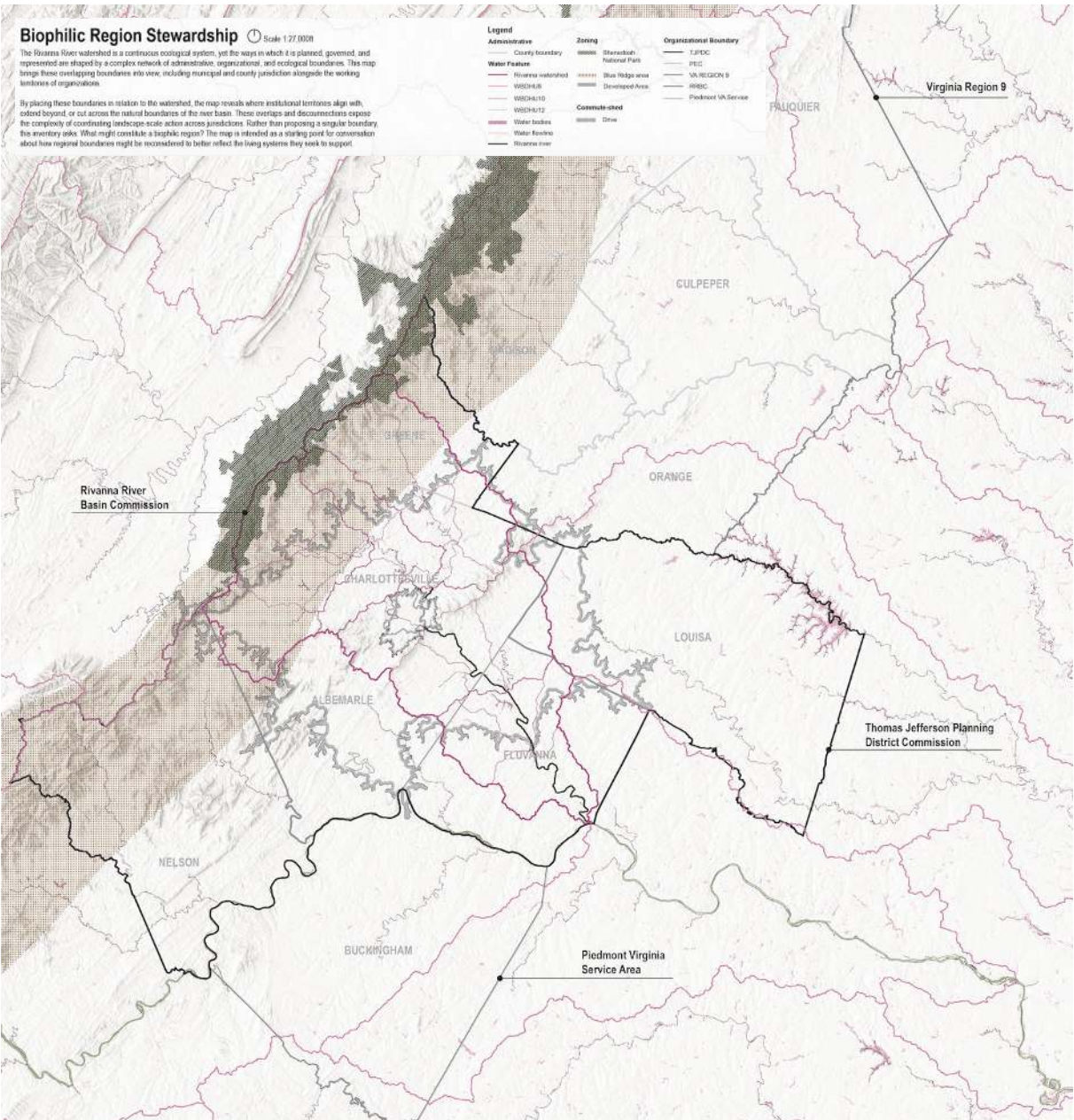
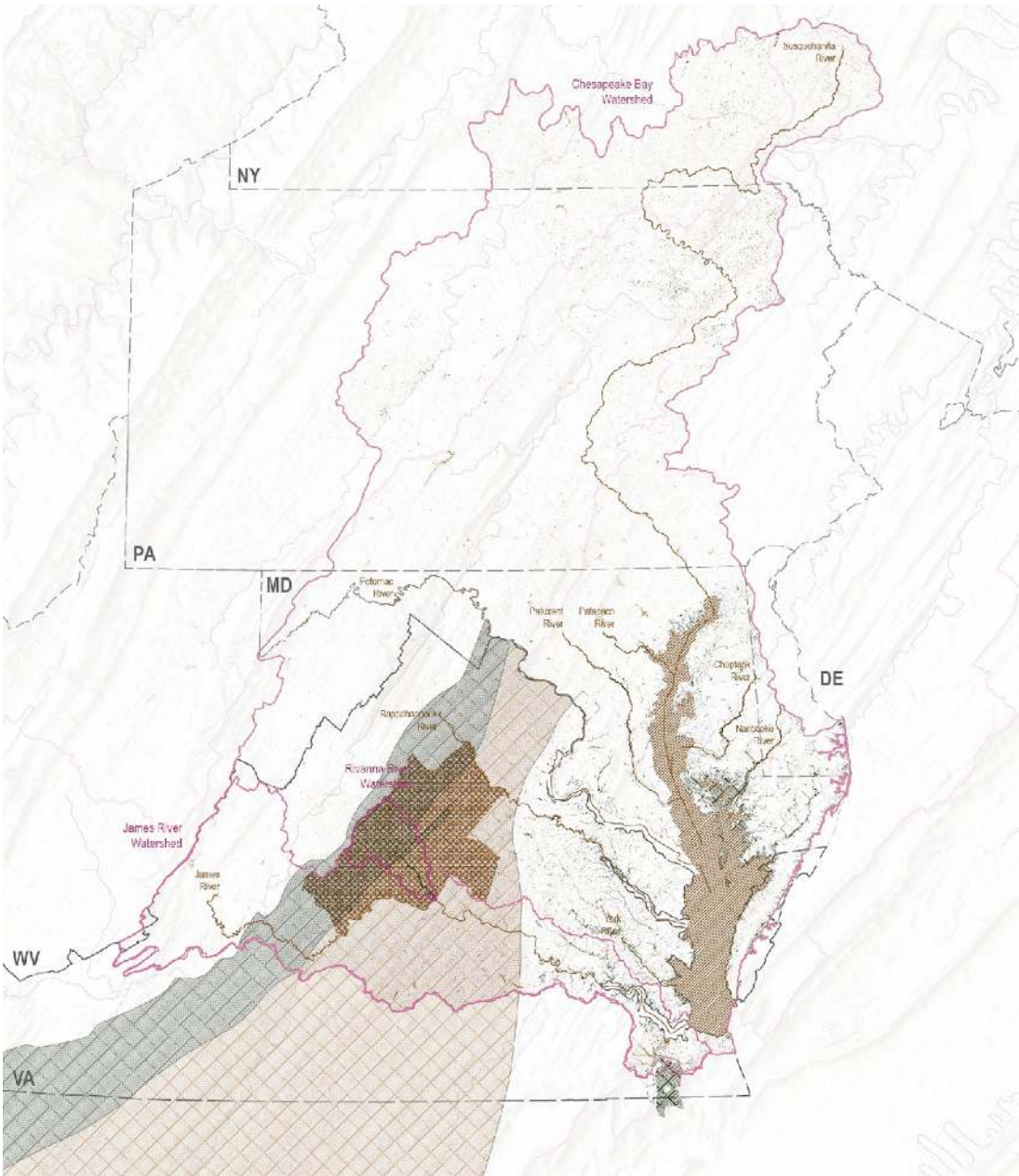


Biophilic Region Exhibition 2025, Land conservation efforts and urban expansion into the county. This student project was edited for the exhibition, Student credits: Katherine Shi, Fall 2024

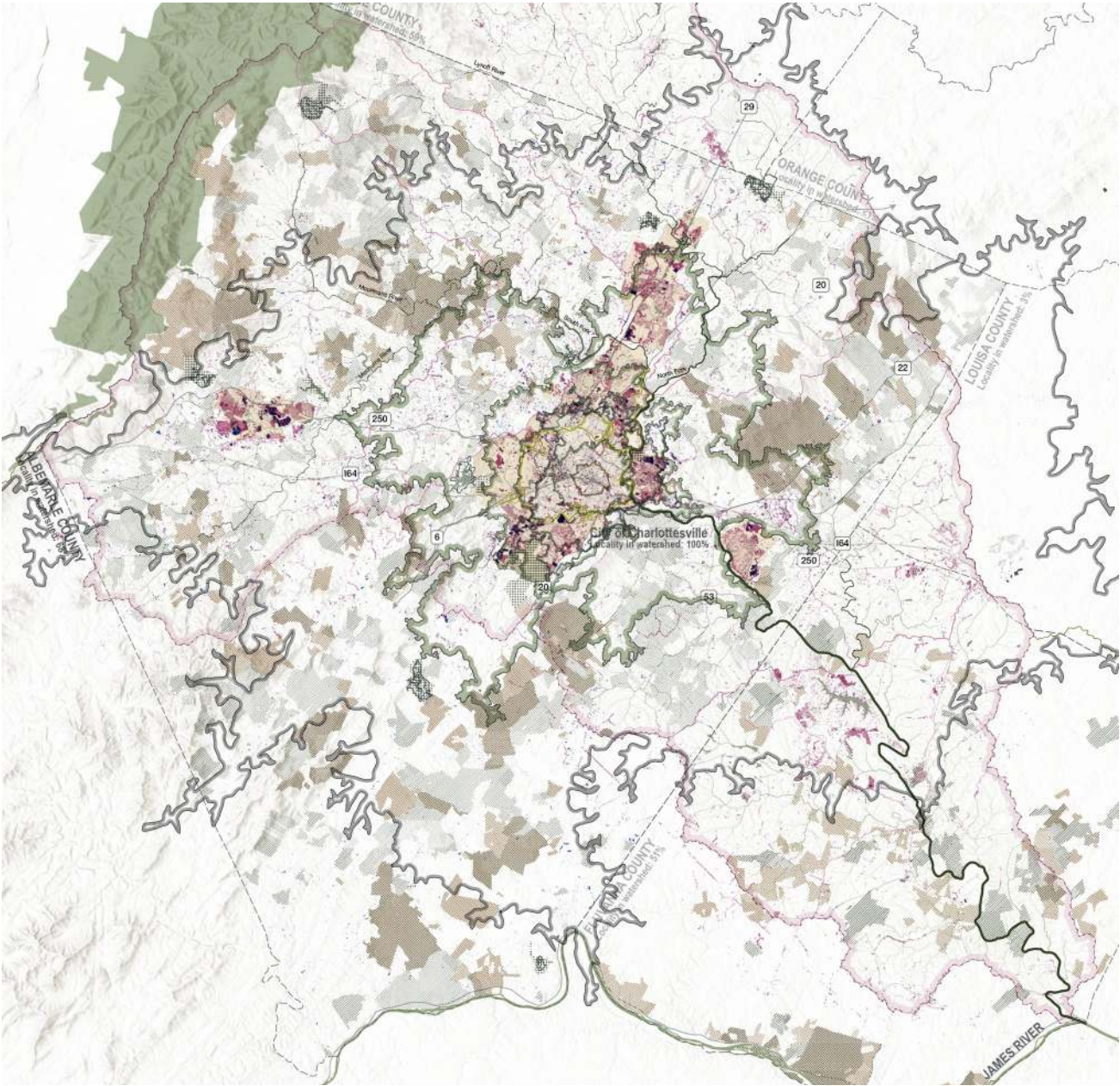


Biophilic Region Exhibition, 2025, UVA School of Architecture, Curatorial Team: Mona El Khafif, SRAs Summer 2025: Julia MacNelly, Joyce Fong, Katherine Shi, Image Copyright: Corbett Smithson

Biophilic Region Exhibition, 2025, UVA School of Architecture, Curatorial Team: Mona El Khafif, SRAs Summer 2025: Julia MacNelly, Joyce Fong, Katherine Shi, Image Copyright: Corbett Smithson



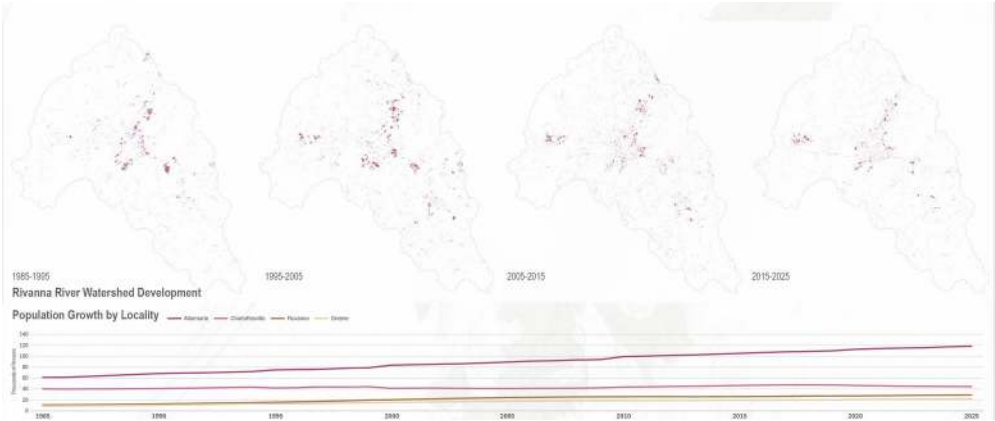
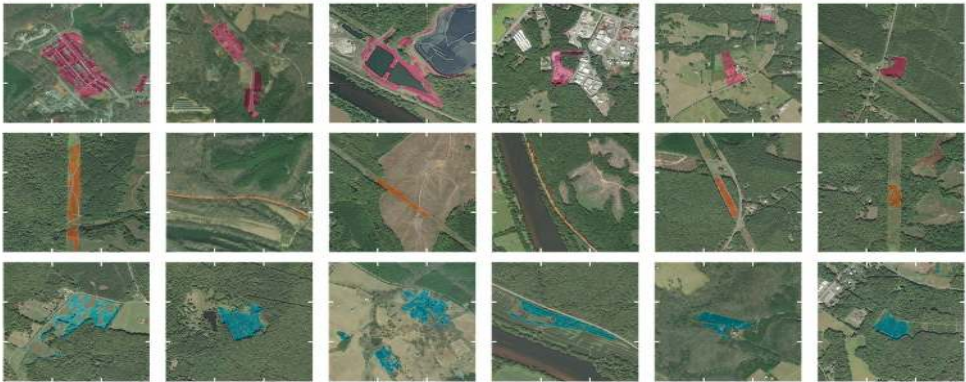
Biophilic Region STEW Map Workshop 2026, UVA School of Architecture, Team: JD Brown, Tim Beatley, Isabella O'Brien, Mona El Khafif, Graphic Work and GIS Research: Joyce Fong (PhD Student UVA School of Architecture)



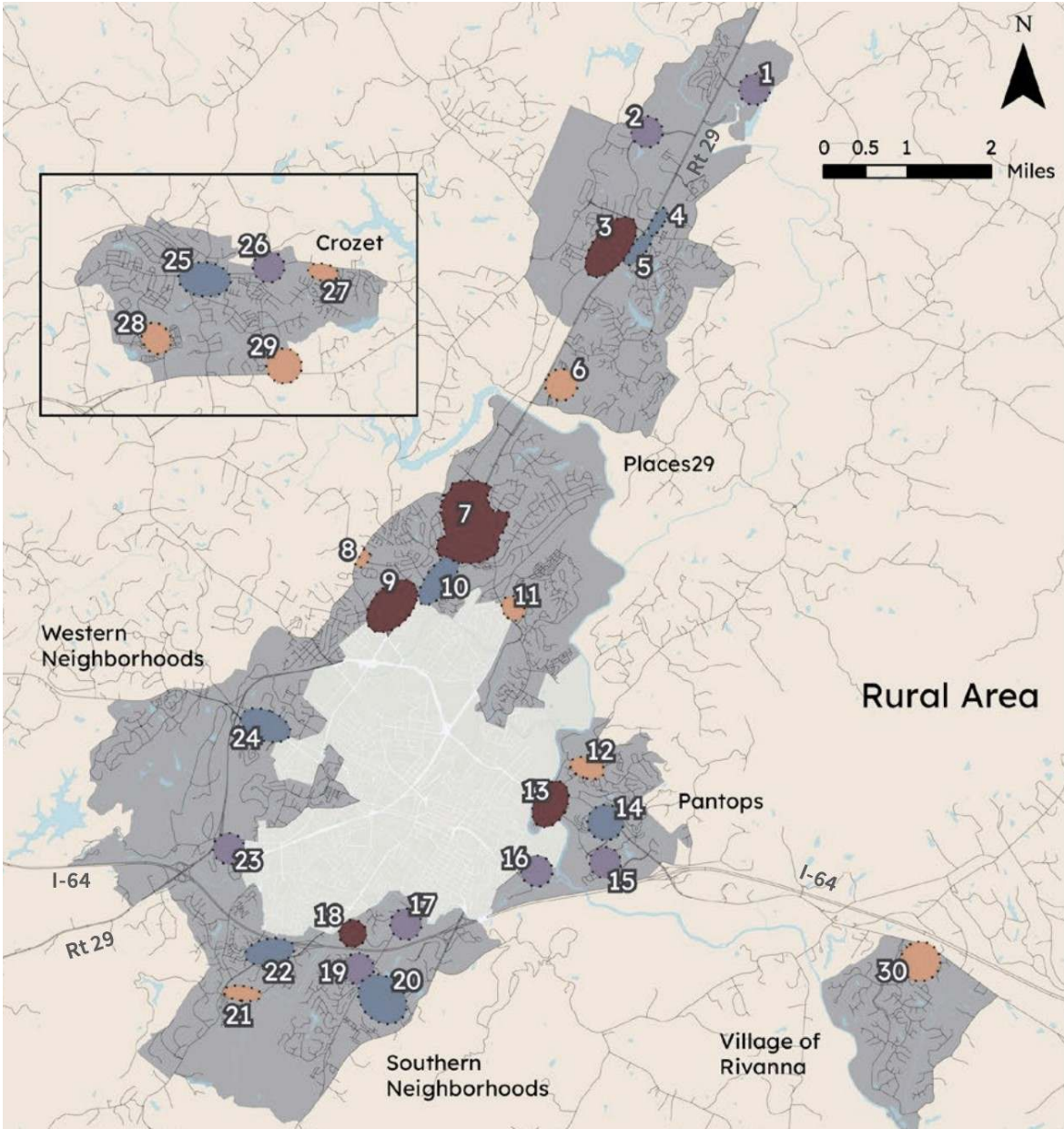
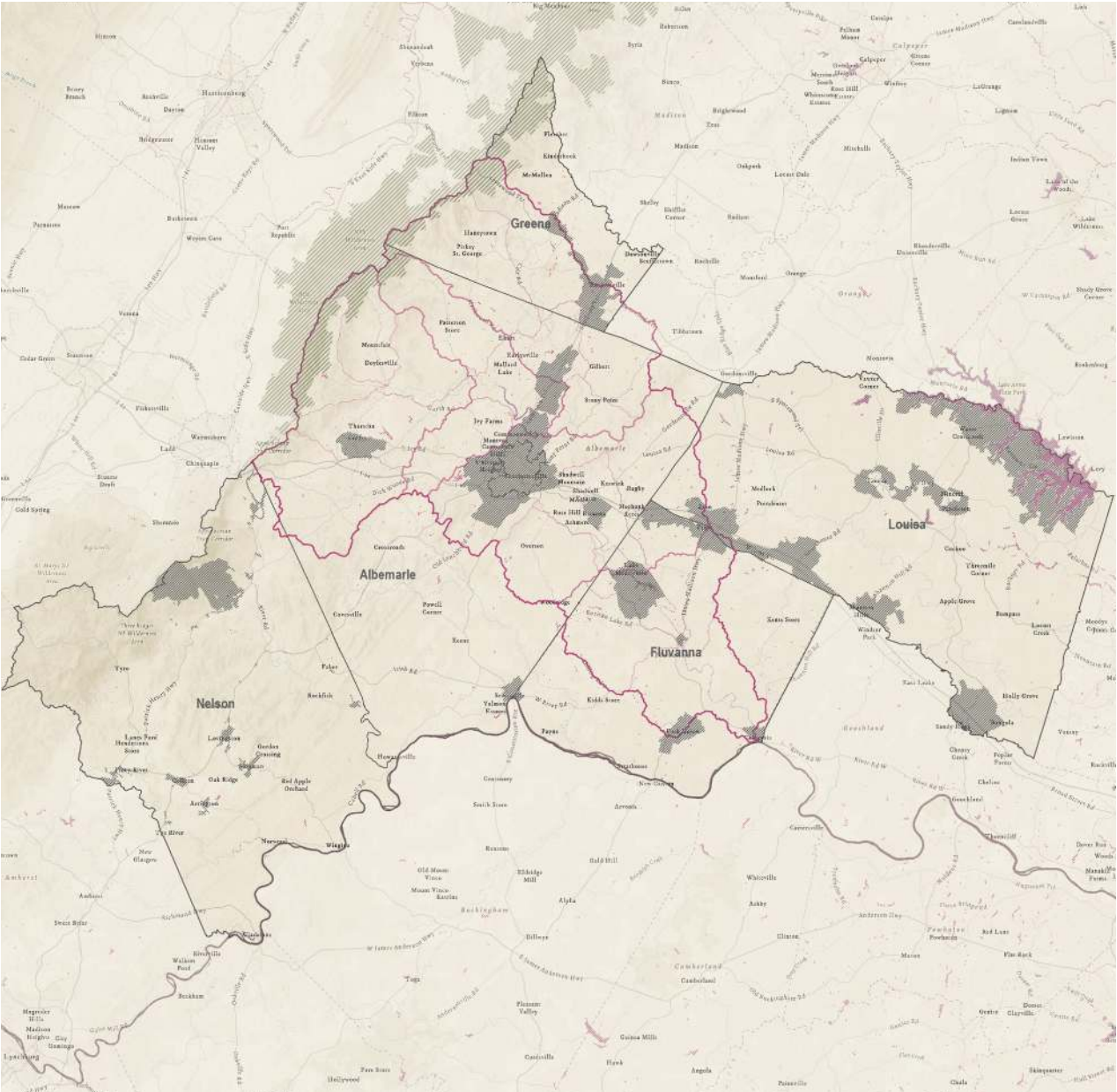
ALBEMARLE COUNTY



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Biophilic Region STEW Map Workshop 2026, UVA School of Architecture, Team: JD Brown, Tim Beatley, Isabella O'Brien, Mona El Khafif, Graphic Work and GIS Research: Joyce Fong (PhD Student UVA School of Architecture)



Biophilic Region STEW Map Workshop 2026, UVA School of Architecture, GIS Research: Joyce Fong (PhD Student UVA School of Architecture), right: AC44 Chapter 3 Implementation, 2026

Group	Facilitator	Notetaker	Breakout Room Assignment
1	Logan Ende	Tim Padalino	153A
2	JD Brown	Dylan Bishop	153B
3	Tim Beatley	Richard Zheng	158
4	Mona El Khafif	Ethan Heil	220B
5	Christine Putnam	Rowena Zimmermann	108
6	Isabella O'Brien	Khansa Ghumman	220C