

HIXON CENTER FOR URBAN ECOLOGY

The Hixon Center for Urban Ecology provides an interdisciplinary forum for scholars, students, and practitioners to work collaboratively on integrated research, teaching, and outreach to improve our understanding and management of urban ecosystems within the United States and around the world. Core to the Hixon Center's work is its commitment to applying theory in practice.

The ecological health and integrity of urban ecosystems have a profound impact on urban economic productivity and quality of life. Pioneering research, new theoretical understanding, and innovative practice will be required to provide the knowledge and tools necessary to foster healthy natural systems essential for the future well-being of the modern city and the people who live there. This need has never been greater than today, when a majority of the world's population either resides in or is rapidly migrating to urban areas.

To accomplish its mission, the center builds upon and strengthens the work of several programs at the School, including the annual Hixon Center Urban Conference, Urban Resources Initiative, "Silviculture in the City" applied forest research, climate engagement through art in cities, using earth observations to reduce greenspace and health inequities in Connecticut, and the Central Park Climate Lab. Further, the Hixon Center is aligned with the newly formed University-wide initiative Yale Urban.

The Hixon Center has a strong focus on collaboration within the School, across the University, and beyond. The center sponsors lectures and symposia as a means to disseminate ideas and foster dialogues and understanding of the critical issues confronting urban ecosystems.

The Hixon Center also supports students' basic and applied research through fellowships connected to current Hixon Center priorities in the realm of urban ecology. The center will continue to build the urban environmental focus at Yale while strengthening the School's urban dimension, creating new models and approaches for addressing urban environmental challenges.

URBAN RESOURCES INITIATIVE

The Urban Resources Initiative (URI) is a not-for-profit/university partnership dedicated to community participation in urban ecosystem management. A substantial body of learning recognizes that sustainable urban ecosystem management depends on the meaningful participation of local residents. Those who know local conditions and whose daily actions influence the health and quality of urban ecosystems must play a central role in designing and implementing management strategies. Sustainable natural resource management and conservation cannot be achieved by technical, scientific solutions alone. Conservation efforts, especially in urban areas, must emphasize social revitalization alongside environmental restoration.

Yale's URI program draws on these essential elements to facilitate community participation in urban ecosystem management. "Community" is defined quite broadly. It includes the group of neighborhood leaders with whom interns work to restore lands

near their homes. Community is a group of teens who are learning how to assess the tree canopy of their city. Community is the staff and leadership of city agencies who have the responsibility and resources to be environmental stewards of their city. URI's approach responds to and engages all of these communities.

URI offers a number of clinical learning opportunities that allow YSE students to gain real-world practice in their field. Listening to local concerns and developing environmental programs in cooperation with neighborhood groups, NGO partners, schools, and city agencies are the cornerstones of our work. Through these programs YSE students can make a real contribution to the New Haven community while they enrich their academic work by applying theory learned in the classroom with supervised clinical training. These programs include the Community Greenspace program, GreenSkills, environmental education/job training program, research opportunities, and training in urban forestry practices.

Community Greenspace Each summer YSE students work as community foresters as part of the Community Greenspace program, a citywide initiative to revitalize New Haven's neighborhoods by planting trees along streets and in parks, remediating lead from soil in front yards, reclaiming neglected lots, and building community. Each intern works with community groups, which develop restoration goals and design an implementation strategy for the summer. The interns support neighbors in conducting an inventory of existing trees, selecting species, preparing sites for new plantings, and planting perennials, shrubs, and trees.

The Greenspace program is an opportunity for Yale students to learn urban forestry practices. Neighbors initiate the process by identifying their environmental priorities in their community. URI looks to the local experts – the people who live in New Haven neighborhoods – as partners in defining and then assessing, designing, implementing, and sustaining the urban landscape.

Green job training Launched in 2007, URI's GreenSkills program creates an opportunity to address a critical predicament – a growing deficit in and unequal distribution of New Haven's street-tree canopy that can be countered by a green job program bringing together Yale and high school interns. In 2010 the GreenSkills program was expanded to include adults with barriers to employment, particularly those whose life experience includes incarceration. Its goals include increasing New Haven's street-tree canopy by engaging adults and local high school students in tree planting efforts, thereby providing them with paid green job training opportunities. Each tree planted by URI's GreenSkills team is at the request of a New Haven resident, who commits to the stewardship of the newly planted tree.

The second major activity of URI's GreenSkills program is to optimize green infrastructure solutions to manage stormwater and improve water quality in partnership with the City of New Haven. In New Haven, three rivers flow through densely settled urban areas before draining into New Haven Harbor and Long Island Sound. Large areas of impervious surface and compacted soils lead to significant overland flow of contaminated stormwater. The contamination in the waterways is the direct result of stormwater runoff from the city's impervious surfaces, which overload the city's combined and separate storm sewer systems and eventually discharge into Long Island Sound. Green infrastructure, such as infiltration bioswales, significantly reduces storm flows and improves water quality. URI and EMERGE CT (a local NGO),

in partnership with the City of New Haven, have installed two hundred bioswales to improve stormwater quality and reduce storm flows to separated and combined sewers.

RESEARCH

Both URI and the Hixon Center partner in and support applied research in urban areas as well as fund master's and doctoral research projects at the Yale School of the Environment. URI activities provide valuable research opportunities in community organizing and development, urban forestry management, environmental education, and monitoring and evaluation of community-managed ecosystems. Currently, URI and The Forest School at YSE are partnering with the U.S. Forest Service's Northern Research Station to regenerate oak for a climate adaptation initiative in eastern cities through "Silviculture in the City." Hixon as part of YSE, along with the Yale Schools of Art and Architecture, are supporting the first fellows in the Climate Engagement through Art in Cities project, using murals with innovative paint to reduce hot spots in New Haven neighborhoods and communicate about climate change. Hixon Faculty Director Karen Seto is also spearheading two research projects through Hixon and/or URI: "Using Earth Observations to Reduce Greenspace and Health Inequities in Connecticut" and the Central Park Climate Lab, which is in partnership with the Natural Areas Conservancy and Central Park Conservancy.

The Hixon Center also awards master's and doctoral fellows for summer research. For summer 2023, eight Hixon Fellows advised by eight different YSE faculty members will study topics including but not limited to spatiotemporal analysis of compound hazards in urban areas across California, understanding carbon sequestration and food access in NYC green roofs, understanding changing health disparities, urban silviculture, street tree communities in residential areas of Nairobi, and understanding urban forest dynamics.

Some examples of past student research activities include a community survey to determine human health impacts of vacant lands; measurement of biological communities found in Greenspace sites and abandoned lots; how community group dynamics affect urban street-tree survival; and measurement of density of street trees per linear mile to reveal tree canopy inequities, which need to be resolved.

HIXON CENTER URBAN CONFERENCE

Since 2013, the Hixon Center has held an annual conference on urban ecological issues of local, national, and global importance. On September 23, 2022, Hixon and the Yale Planetary Solutions Project co-organized "Cities as Solutions to Climate Change: Perspectives from IPCC Authors." Hixon and YPSP brought together researchers and practitioners to discuss the potential impacts that cities have on climate change around the world. Speakers included two vice chairs and seven lead authors from the Intergovernmental Panel on Climate Change, the United Nations body for assessing the science related to climate change. On September 15, 2023, the Hixon conference will focus on urban forestry.

YALE URBAN

In March 2023, the Hixon Center's Faculty Director Karen Seto and faculty leaders across Yale launched Yale Urban, a new Yale-wide initiative that brings the University's expertise and diverse strengths on urban research and practice together. It is a conduit

for world-class scholarship and interdisciplinary action to shape a more sustainable urban world and deploy urban solutions at scale.