

WINTER 2018
LA 439

CRN 23961

DESIGNED LANDSCAPES FOR CLIMATE RESILIENCE



Sankt Kjelds square; credit: www.tredjenatur.dk

time MWF 1:00-4:50pm

location Lawrence Hall room 312

credits 6

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studio description This studio examines ways to design landscapes for climate resilience, at a site scale. Students will produce a set of design guidelines and landscape interventions, a climate resilient plant palette, and a complete design for a developed space. The studio will include group work and individual work, and will explore the design problem through both analogue and digital media.

“Efforts to foster climate change resilience must be bundled with efforts to promote urban development and sustainability.” *Robin Leichenko, Climate change and urban resilience, Current Opinion in Environmental Sustainability, Volume 3, Issue 3, 2011*

“Within the overall context of the uncertainty surrounding climate change, cities should provide a pleasant experience for the population, improving the quality of urban life and encouraging the use of outdoor spaces. Given the current concern about sustainable development,

landscape architects and urban planners are now paying more attention to the aspects of urban climate parameters and incorporating them into their work as design parameters. Indeed, a better understanding of the urban climate can serve as an important guide in building more sustainable cities. To reverse the fragile situation of cities is a challenge for many – landscape architects and urban planners included.”

Julie Lucchese, Land8: Landscape Architects Network blogpost May 21, 2014
<http://landarchs.com/copenhagens-first-climate-resilient-neighborhood/>

prerequisites	Fall and Winter Plants, Landscape Media and Digital Media, Analyzing Land Systems, Tech I
class format	Class meeting times are primarily structured around project work, critiques, class discussion, lectures, site visits, and occasional guest presentations. Outside of class time, students are expected to analytically review selected readings, research similar project typologies, familiarize themselves with the history and future planning of the site, execute ad hoc site visits, develop designs for intermediate assignments, and prepare for midterm and final reviews.
grading	Consistent with all Department of Landscape Architecture studios, this studio is graded Pass/No Pass with formative and summative feedback distributed throughout the quarter. Students need to be prepared for and participate in class discussions. Students are expected to attend all studio days and to submit work on time.
background information	<p>“Seasonal water patterns shape the life cycles of the region’s flora and fauna, including iconic salmon and steelhead, and forested ecosystems. Adding to the human influences on climate, human activities have altered natural habitats, threatened species, and extracted so much water that there are already conflicts among multiple users in dry years. As conflicts and trade-offs increase, the region’s population continues to grow. Particularly in the face of climate change, the need to seek solutions to these conflicts is becoming increasingly urgent.</p> <p>Observed regional warming has been linked to the changes in the timing and amount of water availability in basins with significant snowmelt contributions to streamflow. By 2050, snowmelt is projected to shift three to four weeks earlier than the last century’s average, and summer flows are projected to be substantially lower, even for a scenario that assumes emissions reductions. These reduced flows will require trade-offs among reservoir system objectives, especially with the added challenges of summer increases in electric power demand for cooling and additional water consumption by crops and forests.</p> <p>Climate change will alter Northwest forests by increasing wildfire risk, insect and disease outbreaks, and by forcing longer-term shifts in forest types and species. Many impacts will be driven by water deficits, which increase tree stress and mortality, tree vulnerability to insects, and fuel flammability.”</p>

U.S. National Climate Assessment, U.S. Global Change Research Program

“Management plans for species and habitats should aim at developing resilient landscapes where the evolutionary potential of species and populations can be conserved. This can be achieved by explicit consideration of genetic diversity and the processes that support ongoing, in situ evolutionary processes in biodiversity management and planning. From an evolutionary perspective, landscapes need to allow in situ selection and capture high levels of genetic variation essential for responding to the direct and indirect effects of climate change.” *Sgro, Lowe and Hoffman, Building Evolutionary Resilience for Conserving Biodiversity Under Climate Change, 2011*

“Conserving wildlife reserves and restoring habitats are important work, but by themselves they are not enough. These places are too small, too few, and too isolated. As the global climate changes, these reserved ecosystems will change too, and in some cases collapse. In the modern era of growing human population, urban development, habitat destruction, and changing climate, we need to find ways to integrate ourselves with the more-than-human world, to fuse the bits and pieces together into a larger, coherent living whole. In a new version of resilient, adaptive systems, nature and humans are now coevolving. Conceptually, we can imagine a green fabric or green net linking parts of the planet including our cities. Our task is to repair “breaks in the net” and reweave the fabric. Imagine, for example, a city where green roofs, small backyards, town squares, larger parks, school grounds, and tree filled cemeteries are all functioning ecosystems dotting the city with patches of habitat, all connected together into a green network by greenways, vegetated swales, and healthy stream corridors.

Two potential habitats that may come immediately to mind are backyards and parks. The more structural diversity and diversity of plant communities we can provide in these sites, the more kinds of organisms are able to live there. A healthy site with structural diversity has multiple layers of vegetation and varied ground surfaces to provide multiple habitat niches. It should provide water where possible, natural el-

ements for cover and shelter, and escape cover such as shrubs and low trees. It allows dead trees to remain standing where it is safe to do so and allows fallen leaves and debris to remain on the site to provide microhabitat and recycling of nutrients. Using native plants provides resources for animals. All of these strategies can be done in ways that are still attractive to human sensibilities. The goal is not for a place that “looks natural” but for a place that functions as a natural ecosystem.”

“Buildings and landscapes are more than single, detached objects. Together they are connected elements whose flows of energy and materials contribute to a larger environmental context. Habitat conservation areas are important, but 80 to 90 percent of the land that humans use and inhabit is not addressed by these conservation areas. In order to have a healthy biosphere we need to retain healthy ecosystem functions - on every site. Any landscape whether it is a single residential yard, a city park, a college campus, or a shopping mall has the potential to purify air, cleanse water, provide habitat, and restore ecosystem function.

A healthy outdoor site features a diversity of plant and animal life, with species that are either native or adapted to the local region. It is resilient, able to accommodate change while retaining essentially the same function, structure, and identity.” *Margaret Robertson, Sustainability Principles and Practice, 2014*