A how-to guide for climate-proof cities

April 8 2019, by Jeremy Jacobs

A healthy cypress swamp in Lake Martin, Louisiana. Credit: U.S. Geological

Roughly 400 miles separate Memphis and New Orleans. Interstate 55 connects the two cities, snaking south parallel to the Mississippi River. The drive is dull. There are few cars. The trees are endless.

South of the Louisiana border, the land turns flat, low, and wet. The air grows warmer, and heavy with moisture. I-55 cuts through the center of Maurepas Swamp, a 100,000-plus acre tract of protected wetlands. Groves of gumball and oak are rare here—instead, thin swamps of bald cypress and tupelo trees surround the highway on either side. At night, only their skeletal silhouettes are visible. They rise from the low water, briefly illuminated by passing headlights. Even in the dark, the trees are unmistakably dead.

Traditionally, Maurepas Swamp serves as a natural barrier against flooding that threatens New Orleans each year. Native flora soaks up the rainfall, spreading it across a network of cypress roots and cattail. But centuries of logging and canal construction have drastically altered the swamp's ecological composition. The Mississippi levee system compounded the issue, isolating the swamp from vital sources of fresh water and nutrients. Flooded with saltwater, much of the existing cypress withered and died. Young trees, now, are few and scattered.

Maurepas Swamp highlights the danger of even the most well-intentioned changes to the environment. This problem is hardly unique to the wetlands. "Many of the issues that we are experiencing today were seen as solutions in the past," says Nancy Grimm, a professor of ecology at Arizona State University. "What we want to do now is to think about the future, so that the solutions of today don't become the problems of tomorrow."

Nancy Grimm addresses urban sustainability at the 2019 Henry J. Oosting Memorial Lecture in Ecology. Credit: Nicholas School of the Environment

Grimm is the co-director of the UREx Sustainability Research Network. UREx aims to climate-proof urban municipalities without sacrificing environmental stability. To do so, UREx has partnered with several cities across the United States and Latin America. Each city hosts a workshop geared towards municipal decision makers, such as government officials, environmental NGOS, and more. Together, these participants design different "futures" addressing their cities' most pressing concerns.

Phoenix, Arizona is one of the nine initial cities partnering with UREx. One of the hottest cities in the United States, Phoenix is already plagued

with extreme heat and drought. By 2060, Phoenix is projected to have 132 days above 100°F—a 44 percent increase from data collected in 2010.

UREx doesn't dwell too much on these statistics. "We're bombarded constantly by dystopian narratives of tomorrow," says Grimm, with a slight smile. "Instead, what we want to think about are ways we can envision a more positive future."

The Phoenix workshop produced five distinct visions of what the city could look like in sixty years. Some scenarios are more ambitious than others—"The Right Kind of Green," for example, imagines a vastly transformed city defined by urban gardens and lush vegetation. But each vision of Phoenix contains a common goal: a greener, cooler city that retains its soul.

A visualization accompanies each scenario. In one, a family walks about a small orchard. The sky is blue, and the sun is out. But no one seems bothered by the heat. The oranges are vibrant; the trees thick, and full. It's an idyllic future. But it's one within grasp.

Provided by Duke University

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