

A wasteland thrives in Jersey



DIEGO CUPOLO/THE STAR-LEDGER

Rutgers-Newark ecologist Claus Holzapfel is leading a study of 251 acres of contaminated land in Liberty State Park, to better understand how nature adapts to heavy pollutants. "It is isolated, it's in an area with higher levels of CO₂, higher temperatures, and it's home to a wide range of biodiversity," he said.

BY DIEGO CUPOLO
STAR-LEDGER STAFF

What would New Jersey look like if every human being suddenly vanished?

Over time, miles of unused roads would be uprooted by trees, as unrestrained forests grew. Patchy grasslands would swallow contaminated industrial sites, and local wildlife would gradually find new dwellings in once-thriving urban areas.

It's a post-human scenario not too different from an area of Jersey City's Liberty State Park, according to researchers at Rutgers-Newark.

Though much of the park has been converted from an abandoned rail yard to the popular tourist attraction it is today, a 251-acre plot of contaminated land, barely touched by human activity for more than four decades, remains behind fences bearing signs that read: "No Trespassing: Hazardous Materials Area."

For the past two years, a team of Rutgers-Newark scientists has been conducting an extensive study of the site to better understand how nature adapts to heavy pollutants. The team is searching for clues about what to

In tainted soil on toxic tract, trees and plants flourish, captivating scientists

expect in our future environments and what kind of plant cover might best help useless "brownfields" heal themselves.

What the scientists have found rising from the cinder-ash-covered ground is a variety of unique ecosystems. Every weed, shrub and tree had to find its way to the barren lot and survive in its compacted soil, which harbors an array of toxins ranging from coal dust to chromate.

Over the decades, the park interior developed into an urban mosaic of native and invasive plant species so rare it may not exist anywhere else in the world, Rutgers-Newark ecologist Claus Holzapfel said.

"As an ecologist, you can't go to Yellowstone all the time; you have to work in the real world, in places like this where pollution and raised carbon dioxide levels from traffic are a big factor in how the flora develops," said Holzapfel, a biological sciences professor.

Holzapfel and his team of graduate students have been analyzing the ways heavy metals are absorbed into
[See **WASTELAND**, Page 17]

WASTELAND

CONTINUED FROM PAGE 13

Species find a way to thrive

the food chain, interactions between native and foreign plant species, and the various effects of pollution on the ecosystem.

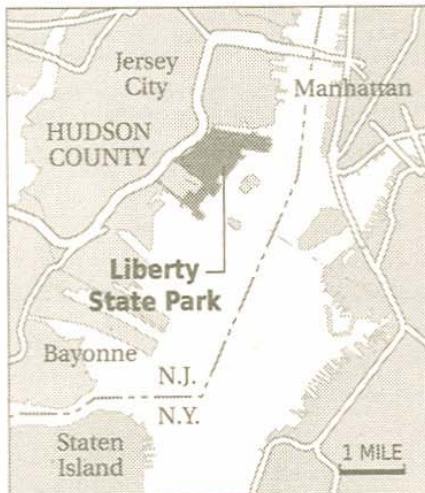
Every chance he gets, Holzapfel escapes from the surrounding metropolis into the park's calm, woody interior, where he watches the progress of plants like the tree of heaven, a tropical Asian species that has thrived in higher temperatures produced by the surrounding urban landscape — a recognized phenomenon called "urban heat island effect."

Like a forensic scientist, he regularly walks the grounds in search of clues about what lies beneath places where a dense stand of poplars suddenly gives way to lumpy grassland with sporadic, bare circles of blackened earth.

Save a few trees at the perimeter, most vegetation crept into the park after the historic Central Railroad of New Jersey Train Terminal closed its gates in 1967. Holzapfel said plant growth has been considerably slow due to harsh soil conditions.

"Since it's been 40 years, you would expect this to be a forest by now," Holzapfel said. "In a place in rural New Jersey, you would have very different results. This is how it would look after five or seven years."

The contaminated ground also affects the local food chain. His team has recorded significant levels of heavy metals in resident house



THE STAR-LEDGER

wrens by examining the breast feathers of their nestlings.

Charles Hofer, a graduate student in the Rutgers department of Ecology and Evolution, found house wrens in Liberty State Park had five to six times the metal content in their feces as did house wrens in Somerset's Hutchinson Memorial Forest. Though he has not observed any negative health effects in the birds, he said studies have shown heavy metal exposure can cause neurological damage, alter hormone production, reduce fertility and increase infant mortality.

Another key study area is the battle over space and soil nutrients between native and foreign species. Usually, invasive species are known for devastating local ecosystems, but any plant life is good plant life in places heavily impacted by industry, said Frank Gallagher, an administrator for the state Division of Parks and Forestry who is managing the future development of Liberty State Park.

Gallagher said invasive species actually paved the way for native ones, building a beachhead in the salt marshes. Today, the percent-

age of invasive species on the site is in decline, he said.

In the coming months, the park's interior will get a \$32 million makeover with the installation of hiking trails and an expansion of freshwater and saltwater marshes. Pollutants will be removed, and the area partially opened to the public.

Gallagher said he wants to create an urban wildlife refuge for educational purposes, but he will leave upwards of 100 acres in its current state for future research.

"Some people might wonder why we want to protect this land since it's mostly invasive species, but from a scientific point of view, this is an ideal landscape," Holzapfel said. "It is isolated, it's in an area with higher levels of CO₂, higher temperatures, and it's home to a wide range of biodiversity. Here, we are already seeing how future plant communities might assemble in a world affected by climate change and pollution."



The radio news partner of

The Star-Ledger

THE VOICE OF NEW JERSEY

News and Sports,
Traffic and Weather
together on the 8s

**Listen live at
WCBS880.com**