

Meet the Rowan Professor Mapping Jersey's Future

Where has all the open space gone? In his Rowan research lab, John Hasse provides visual clues to questions about the Garden State's land-use patterns.

By Kevin Coyne
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On John Hasse's computer screen, the digital map of what New Jersey looked like in 1986 is mostly pink, green and white. The green swaths represent forests; the white patches are fields. The pink is the human footprint—the cities, towns and suburbs that are home to the residents of the most densely populated state in the nation, with more people per square mile than India or Japan.

Then Hasse clicks his mouse to bring the map to life, unleashing what looks like an unstoppable invasion. Red dots bloom like bloody pinpricks, as the map gradually reveals what happened through the next three decades. The red marks the places where development consumed what was previously white and green: farms that were plowed under for crops of McMansions and forests paved over for shopping center parking lots.

“If we took a giant broom and we swept up all of those red blobs—I’m going to pause it at 2015 here,” Hasse says, freezing the map at the last year for which he has complete data, “all those red blobs over the course of 29 years is 360,000 acres of new development.”



NOTE: The Geospatial Lab at Rowan University is funded in part by a grant from the Garden State Preservation Trust.

Sprawl is just one of the stories Hasse can tell with his maps, but it's the one he usually starts with because it strikes such a deep chord in New Jerseyans. Who among us can drive around the state without lamenting what has vanished?

A geography professor at Rowan University, Hasse is the founder and proprietor of NJ MAP, a vast, free and user-friendly [digital atlas](#) depicting the state in such depth and from so many angles that, once you're in, you might only emerge hours later, eyes strained, as if you'd fallen down a YouTube rabbit hole.

You start by zooming into your own street and checking on what your neighbors paid for their homes—the public data for 3 million parcels in the state are available with a click. Before you know it, you're exploring bobcat habitat in Warren County, surveying the demise of peach orchards in Gloucester County, and marveling at how much farmland the state had in the 1920s.

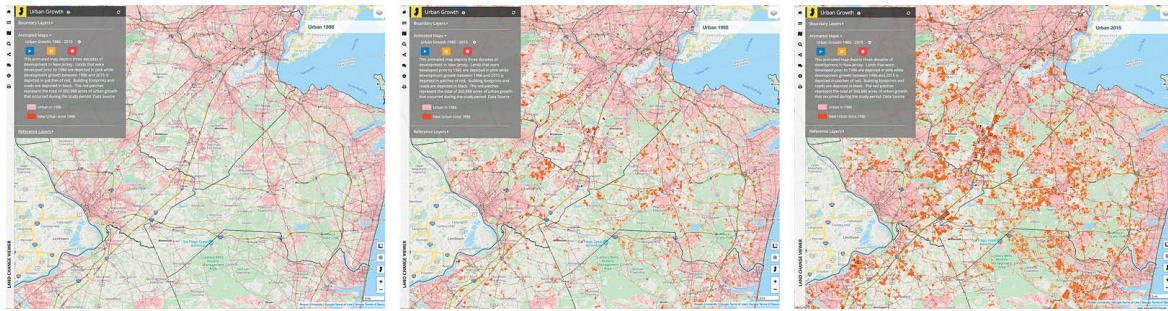
NJ MAP has its origins in the work that Hasse did more than two decades ago as a Rutgers doctoral student in geography. “One of the questions I asked early on was, ‘If we're developing this fast and we preserve a good amount of open space, at what point does New Jersey run out of land?’” he says. “When do we reach build-out?”

Since 2011, NJ MAP has been hosted at Rowan, where Hasse is director of the Geospatial Research Lab. Over the last decade, the project has been gradually assembling a portrait of the state that, as it grows increasingly detailed, becomes ever more useful as a tool for envisioning New Jersey's future.

“This is like a seismic shift in our ability to assess the conservation and recreation value of land with just a click of a mouse,” says Jay Watson, who spent 30 years at the state Department of Environmental Protection, retiring as deputy commissioner. He is now director of statewide land protection and community relations for the private, not-for-profit New Jersey Conservation Foundation.

NJ MAP serves as the engine that drives the New Jersey Conservation Blueprint, a partnership of Rowan, the New Jersey Conservation Foundation, the Nature Conservancy and 21 other conservation groups. In 2019, the Governor's Environmental Excellence Award recognized the Blueprint's work on land conservation.

Christine Nolan, executive director of the South Jersey Land and Water Trust, another of the Blueprint partners, credits NJ MAP with making the partnership's work a lot easier. “To visually zoom in and say, ‘Okay, this is the growth we've had, and if this is going to continue to happen, [then we can] take a strategic approach and say, what is worth preserving?’”



Hasse's animated maps provide graphic, digital evidence of the changes that development has wrought in New Jersey. This trio of screenshots shows the increase in urban growth in much of northern and central Jersey from 1986–1995 and 1995–2015. The pink areas indicate urban areas as of 1986; the orange areas indicate new urban growth. Hasse's research suggests there are about 700,000 acres remaining for development in our state of 5 million acres.

On his computer screen, Hasse unveils another layer of the map. “Here is the developed land,” he says, clicking. Large swaths of the state turn black, pink and orange—the places that were built long ago and the places that have been built in more recent decades.

“And then we have preserved open space.” Green seeps in, representing public parks and forests and private conservation land.

“And we have preserved farmland.” Yellow dots pop up, indicating the 238,383 acres that have been preserved under the state’s agricultural preservation program.

Hasse clicks some more, showing land that can’t be built on because it borders waterways, wetlands or roads, or because the slope is too steep. And then he clicks off all the other colors to show a map of the state speckled with purple, like a field of spring irises.

“What you have left is the remaining available land,” he says. This is the land that hasn’t yet been developed or preserved—the raw material of New Jersey’s future.

“Our latest estimate is somewhere around 700,000 acres in a state that’s 5 million acres. That’s not a lot left,” he says. “It’s the land planners and the communities and the municipalities [need to know about]. This information is going to help them to decide what happens to that purple land”—and what colors the map will turn next.

Everybody who has lived long enough in New Jersey has a tale of loss, a cherished place that has been threatened or erased. Hasse’s is what set him on his career path. Across the street from his parents’ home in South Harrison Township in Gloucester County was a vernal pond shielded from the road in a patch of woods. It was a haven for frogs. “At least five different species,” he says. “I’d sit on a log there in springtime and just listen to them. That was deafening.”

Then came the notice that the woods were slated for development. “I was devastated,” he says. “Here was my special space, and they were going to put in a subdivision.”

He was a Rowan student at the time, in a mapping class, and he took photos of the site to the planning board. The developer was angry enough to charge him with trespassing, but after a long battle, the number of houses permitted on the site was drastically reduced. The pond remains, and Hasse now teaches in the same geography classroom where he was once a student, Robinson Hall 302.

Watson’s place was Shabakunk Creek, near his boyhood home in Ewing Township. “I spent so much time mucking around in the stream there that my mother used to make me turn my pockets inside out, because I’d always come home with snakes and turtles and frogs,” he says. “I kind of assumed that the land was preserved, and the next thing I knew, before I knew how to engage and oppose inappropriate development, it was turned into a massive housing development.”

When Watson started with the state DEP, he says, the tools were “tax maps with acetate overlays and grease pencils.” On his computer screen now, he can open NJ MAP and zoom in to a piece of land in the Sourland Mountains that the Conservation Foundation is about to purchase. “We’re building this big block of public open space here,” he says, clicking on a large private parcel that sits between two tracts of preserved land. The Sourlands are the largest intact forest in Central New Jersey and the summer home for migratory songbirds from Central and South America. “We can click to the tax maps now and know who owns the land and how to get in touch with them to say, ‘Are you interested in preserving your property? We’re interested in purchasing it.’”

Hasse recently built a map of the Highlands region for the Nature Conservancy, showing how much development the existing zoning laws would permit.

“We were quite staggered by the results,” says Eric Olsen, the conservancy’s director of lands and rivers in New Jersey. “Really, for the first time, we were seeing the window of the need for action to conserve as much land as possible and the need for smart development that could promote growth while protecting the integrity of the natural resources before we reached this build-out.”

Two decades ago, when Hasse was a graduate student wondering if buildable land in New Jersey was a finite resource, open space was vanishing at a breakneck pace. “You see the past development happen, and then you can project that same rate going forward; it starts to make sense that, at the rate that we were developing in the early 2000s, we were going to probably run out of land around mid-century,” he says.

The story over the last decade has been different. A real estate crash, the lean years of the Great Recession, a migration into denser urban areas like Jersey City, the persistent success of open-space ballot initiatives, and the growth of preserved farmland acreage have all slowed the sprawl.

“There will be places in Cumberland County and Sussex County that will be undeveloped for probably centuries, but other parts of New Jersey will reach build-out—in fact, many counties are already at build-out,” he says, citing Camden County as an example, where purple tracts on his map—land that hasn’t already been preserved or developed—are scarce. “A lot of counties are closer to build-out than they want to believe themselves because they don’t look like Hudson County.”

Where will the story go next? As the pandemic reshapes the lives of New Jerseyans, will it reshape New Jersey itself? How many people will seek sanctuary in greener corners of the state? How many commuters, no longer tethered to city offices, will never work anywhere but their own homes again? How will changes in lifestyles and work patterns alter land-use patterns?

What will happen to the purple land on John Hasse’s map?

“That’s the million-dollar question,” he says, “and I can’t wait to find the data in the future.”