

A 'long, creeping change': As climate warms, Virginia fisheries struggle to adapt

By Sarah Vogelsong - June 24, 2019



Creative Commons via Pixabay. Virginia fishermen are pushing to participate in an experimental shrimp season as more are found in Virginia waters.

George Washington had few dietary preferences, save one: he was “[excessively fond](#)” of fish.

Luckily for the president, his perch at Mount Vernon afforded him an easy opportunity to indulge.

The Potomac, he recorded in 1793, was “well-stocked with various kinds of fish in all Seasons of the year, and in the Spring with Shad, Herring, Bass, Carp, Perch, Sturgeon, etc. in great abundance. ... The whole shore, in fact, is one entire fishery.”

Today, Mount Vernon still overlooks the Potomac, but the species that call Virginia waters home are increasingly different due to something Washington couldn't have foreseen: climate change.

“It's hard to manage fisheries to begin with, [and] in the past we've always considered the climate stable,” said Patrick Geer, deputy chief of fisheries management for the Virginia Marine Resources Commission. “But now that theory of a stable climate and environment has been taken out.”

As global air temperatures warm, so too do global waters. The [Environmental Protection Agency estimates](#) that the temperature of the ocean's surface has risen

an average of 0.13 degrees Fahrenheit every decade since the beginning of the 20th century. And [the Chesapeake Bay is estimated to be warming even faster](#), at an average rate of 1.2 degrees every decade since the 1980s.

Increasingly, that is making environments inhospitable for fish. In reaction, populations on the East Coast are shifting northward and eastward, leaving commercial fishermen and states who have long relied on their presence with lighter nets – and fears of lighter coffers.

Some of those fears are justified. The classic cautionary tale is that of New England's northern shrimp fishery, which crashed precipitously around 2012 and was closed in 2014 by the Atlantic States Marine Fisheries Commission, the governmental body that oversees the management of fisheries in state waters from Maine to Florida. In February 2018, the ASMFC extended the moratorium to 2021 in [an announcement](#) that linked the collapse to warming ocean temperatures and broached the possibility of a future in which “the stock has no ability to recover.”

Such regional collapses may become more frequent in coming years, while at the same creating more favorable environments for other species.

“In any one region, some species will experience improving environmental conditions that may result in increased available habitat and increased species productivity, while other species will experience the opposite and perhaps decline in abundance,” the National Marine Fisheries Service declared in its [2015 Climate Science Strategy](#).

Or, as Geer put it, “For any given area and for any given species, there will be winners and losers.”

In the meantime, fisheries managers are facing a host of new problems. Most pressing is the growing gap between quota allocations, which reflect where fish have historically been found, and the actual presence of fish in the waters today.

Commercial fishermen aren't free to fish whatever they want, whenever they want. On the East Coast, all fishing in state waters is governed by the ASMFC, which sets quotas for how many fish can be harvested commercially and recreationally each year to ensure that populations remain sustainable. Commissions are also in charge of allocating each state a certain percentage of that quota. (Fishing in federal waters is managed similarly by regional councils under the [1976 Magnuson-Stevens Act](#).)

A number of quota allocations, however, are largely based on data from decades ago that may no longer match what fishermen are seeing out in the water.

“States that historically had not seen large landings are now seeing more and more fish,” said Tina Berger, director of communications for the ASMFC. And when it

comes to reallocating quotas, those in the South Atlantic region like Virginia that are seeing their long-prized populations shift north up the coast “want to hold on to what they have.”

The concern, said Geer, is that “if something is given up, you’ll never get it back.”

‘Significant disparities’

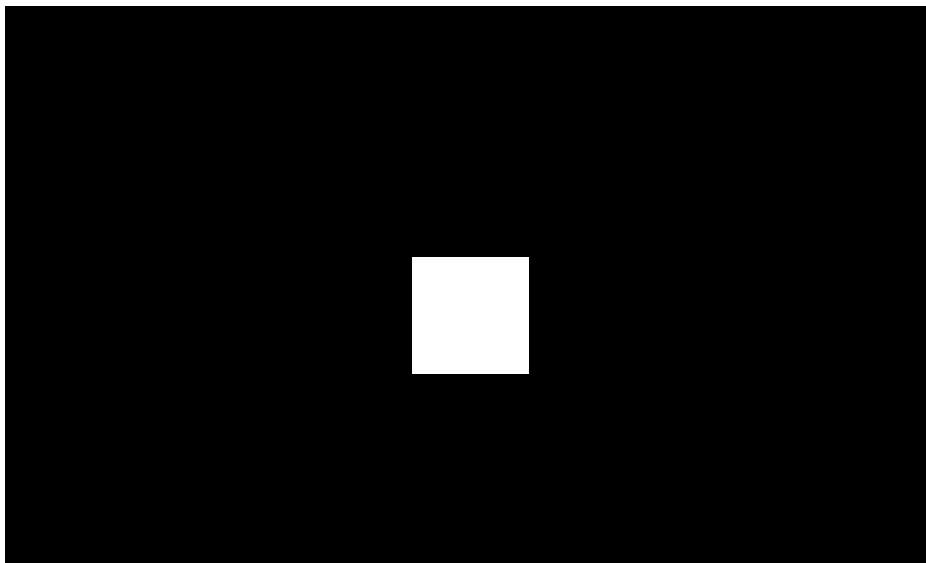
For Virginia fishermen, much of the concern over changing quota allocations centers on two fish: black sea bass and summer flounder.

These populations have much in common. Both have been fished for years off the Atlantic coast. Both migrate between state and federal waters and are therefore managed jointly by the ASMFC and several federal councils, including the Mid-Atlantic Fishery Management Council and the New England Fishery Management Council.

Most importantly, both fisheries have historically been dominated by the southern mid-Atlantic states, generally understood in fisheries management circles to stretch from New Jersey to North Carolina.

That dominance has been justified using data from as far back as the 1980s. Since 1993, Virginia has been entitled to about 21 percent of the commercial summer flounder quota, exceeded only by North Carolina’s roughly 27 percent share. Since 2003, the state has enjoyed 20 percent of the commercial black sea bass quota, matched only by New Jersey.

Over the past decade, however, these fish populations have begun expanding north – a shift that has destabilized the status quo.



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(See how the distribution of summer flounder along the East Coast has changed since 1968 in this video illustration from NOAA Fisheries Northeast Fisheries Science Center.)

The problem boils down to percentages. According to Caitlin Starks, a fishery management plan coordinator with the ASMFC, Virginia isn't losing black sea bass, but as the population increases everywhere on the Atlantic Coast, "there has been more growth north of [Hudson Canyon](#) than there has been south of the canyon."

Northern fishermen and the commissioners who represent their interests have taken notice and are beginning to demand greater allocations, giving rise to heightened regional tensions.

Black sea bass (Freshwater and Marine Image Bank)

This April, an ASMFC working group on black sea bass pointed out "significant disparities" between state quota allocations and where the fish are actually found in abundance. Connecticut in particular, some members noted, is seeing far more black sea bass than it ever has before, but its fishermen are only allowed to catch 1 percent of the overall commercial quota.

Summer flounder has proven equally touchy. At [an April 2018 meeting](#), Mid-Atlantic Fishery Management Council member Anthony DiLernia of New York criticized the use of almost 40-year old data for allocation decisions and argued that "some of the southern states could lose a few percentage points."

He also hinted that if changes weren't made, New York would take the issue to the courts, prompting Thomas Fote of New Jersey to fire back: "Go ahead and sue."

This past January, New York did, with [Attorney General Letitia James calling](#) the federal government's "reliance on inaccurate and outdated data" to determine commercial summer flounder allocations "a direct threat to our state's fishing industry."

The case is still pending in the U.S. District Court for the Eastern District of New York.

Summer flounder (Smithsonian Environmental Research Center)

Meanwhile, the ASMFC and the Mid-Atlantic Fishery Council this past March attempted a compromise by establishing a "trigger point" of 9.55 million pounds of summer flounder. Until mid-Atlantic watermen hit that point, each state's allocation would remain the same. But once they exceeded that limit, all of the states (except three where the summer flounder fishery is very small) would be entitled to an equal percentage: [just over 12 percent](#) of the catch.

But while northern states are worried about present losses — the catch they aren't allowed to take in — southern states like Virginia are worried about how much they have to lose.

Summer flounder and black sea bass are valuable fisheries for Virginia, accounting for the state's [sixth- and eighth-highest landings revenues](#) in 2016. (Highest honors that year went to sea scallops, blue crabs and oysters, respectively.)

Fisheries are also more than a matter of fish: they're also an economic framework. Not only do fishermen pay sizable sums to buy into the quota, but whole communities have invested millions and years in vessels, nets, processing facilities and all of the businesses that support the industry, from boat repair to ice delivery services.

This historic investment, the southern states argue, should be taken into account in decision-making about allocations. North Carolina, for example, which has the largest share of the commercial summer flounder fishery, [has pointed out](#) that “shorebased infrastructure and businesses were developed to support the state's commercial summer flounder fishery” and has argued that any new measures should “consider ... the historic fisheries of the affected states.”

If the allocations were to be abruptly reworked, Geer said, “these people who have invested tens of thousands or hundreds of thousands of dollars, all of a sudden they'd be out of a fishery.”

'A long, creeping change'

But if Virginia is facing the possibility of some of its fisheries shrinking, it's also seeing the potential expansion of a previously unknown one: the commercial harvest of Atlantic shrimp.

Virginia has never been much of a shrimping state. For that, fishermen have had to go south, to the Carolinas and, of course, the Gulf of Mexico. But over the past five or six years, watermen began seeing enough of them to justify asking the Virginia Marine Resources Commission to explore the nascent fishery.

In 2017, the first commercial shrimp boat of the experiment launched from Virginia's coast. In 2018, the VMRC allowed two shrimping boats to ply the state's waters. They were successful, pulling in an average of 400 pounds of the shellfish per trip, and netting a harvest worth \$13,000.

“As soon as people started seeing that, they were like, ‘OK, what can we do?’” said Geer. By the spring of 2019, 19 would-be shrimpers had applied to participate in the experimental fishery, which the commission is considering expanding to four boats.

The best guess for what's bringing such large quantities of shrimp into the commonwealth's waters is climate change. As the Earth warms, the larvae of North Carolina shrimp are being brought by winds and currents into Virginia, and particularly the Chesapeake Bay, which is a natural spawning ground due to its diversity and richness of food sources. While previously these juveniles might have found Virginia too chilly to thrive, now it seems that it falls into their sweet spot.

In that way, shrimp are a prime example of the complexity of the relationship between climate change and fisheries.

Temperature may be the main driver of the shifts now being observed, but other factors matter too. Many marine species have adapted to fit very precise environments, meaning that small changes in things like water salinity, available habitat and food sources can have outsize effects.

"There are natural cycles in the ocean, and they're timed to one another," said Kate Wilke, director of the Nature Conservancy's Mid-Atlantic Marine Program. Spawning times for fish, for example, often match up with when the plankton that they feed on while young is at its most abundant. Change those schedules and juveniles may not be able to survive. Depending on where the species is on the food chain, that could set off other reactions.

In Virginia's waters, another important shift relates to eelgrass, a marine grass used by many small fish and shellfish, including juvenile blue crabs, both to hide from predators and as grazing grounds. But the plant is also highly sensitive to temperature, and the Chesapeake Bay has long been near [the southern edge of their range](#).

Scientists like Chris Moore of the Chesapeake Bay Foundation predict that as temperatures continue to rise, eelgrass will disappear from the region. That might not have too much of an effect on the blue crab, which some models show benefiting from the warming temperatures as spawning seasons lengthen, but it could affect other populations.

"It's hard to pick apart what exactly drives fish distribution," said Wilke. And, she pointed out, fish aren't a static part of the system either: "Species adapt too, and I don't think we can really anticipate how species might adapt to these changing conditions."

In many ways, the task fisheries managers are facing is difficult: while scientists work to understand how climate change is unfolding, fishermen still have to get out on the water and fish.

"You try to put the best data you can in there and predict out," said Geer. "But in fisheries we're trying to deal with the now and the near-now. As far as the shifts in

population, we're being more reactive than proactive.”

And while fishermen are used to the uncertainty of life on the water, the perfect storm they're now facing has no end in sight.

“The sea changes every year,” said Geer, “but the problem with climate change is it's going to be a long creeping change that we're going to see over decades.”

Sarah Vogelsong

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In Virginia, Union Hill and racial tensions have put environmental justice back on the map

By Sarah Vogelsong - December 5, 2019

In 1991, a federal court in Virginia found that in King and Queen County, local landfill siting “[had a disproportionate impact on black residents](#).” Three years later, a General Assembly-commissioned study concluded that statewide, minorities bore “[a disproportionate share of any burdens or risks](#)” related to living next to a landfill.

They were unusual official acknowledgements from Virginia of what is today widely accepted knowledge: that minorities and the poor are much more likely to face environmental hazards than their white or wealthy counterparts.

But then, for more than two decades, the state fell silent.

In that, the commonwealth wasn't alone. Despite a plethora of [local environmental justice ordinances across the nation](#) and federal commitments – the Clinton administration considered the issue so important that it directed almost a dozen federal agencies [to incorporate environmental justice into their missions and strategies](#) and established a national advisory council on the matter – states proved reluctant to take action.

Until 2017. That year, Gov. Terry McAuliffe created the state's first council on environmental justice, setting in motion a cascade of events. Suddenly environmental justice – the idea that all people, regardless of race, color, national origin or income, should be protected from environmental risks and have a say in decisions about those risks – has become, if not a hot topic, then at least a noticeable preoccupation in Richmond.

“If you can’t breathe, you can’t trust the water you drink, if you are being constantly inundated with a bad, unhealthy environment, you can’t succeed in life,” said U.S. Rep. Donald McEachin, D-Richmond. “To me that’s fundamental. It comes before almost any other issue I can think of.”

Over the past two years, McAuliffe’s successor, Ralph Northam, [reconstituted the temporary council](#). The Virginia Department of Environmental Quality [hired a third-party consultant](#) to review how the agency was handling environmental justice issues. And “environmental justice” began popping up in official documents, including Northam’s [Executive Order 43](#) committing Virginia to develop a 100 percent carbon-free grid by 2050.

A graph from a 1994 report from Virginia’s Joint Legislative Audit & Review Commission shows the difference between counties’ overall minority populations and the percent of minorities that make up populations surrounding landfills. (JLARC)

For many activists, the state’s renewed focus was a breath of fresh air.

“It’s been good to see and hear from administration officials the words ‘environmental justice,’” said Kendyl Crawford, director of Virginia Interfaith Power & Light, the state chapter of a national group that takes a faith-based approach to environmental activism. “That’s a shift, that it’s part of the conversation.”

But at the same time, that shift left some wondering: Why now? Why, 40 years after environmental justice first broke into the national consciousness, was Virginia suddenly paying attention? Was it just that the American body politic is slow to accept new ideas, and especially reluctant to acknowledge the ways in which race shapes our lives and society? Or was there a catalyst for the reflowering of a movement once seen as the inheritor of the civil rights mantle passed down by Martin Luther King, Jr.?

“People believe it’s a new and novel movement, but it’s not. It’s been around for decades,” said Dawone Robinson, the Northeast/Mid-Atlantic director of energy affordability at the Natural Resources Defense Council and an outspoken environmental justice advocate. But “sometimes,” he said, “it takes a couple of breaking points.”

Union Hill: ‘almost a symbol of racism’

For many activists and policymakers, no single event has done more to put environmental justice on the Virginia map than the state’s approval of a plan by Dominion Energy to site a natural gas compressor station for the 600-mile Atlantic Coast Pipeline in the historic freedmen’s community of Union Hill.

The decision, which made national headlines and is still being litigated in the courts, was described as “almost a symbol of racism” by Robinson, “a very in-your-face specific issue on environmental justice.”

The EPA's definition of environmental justice

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

Part of what has made Union Hill so compelling has been the ways it has tapped into the two most complicated aspects of environmental justice cases: intent and impact.

Intent has long been environmental justice's great stumbling block. Legally, plaintiffs charging officials or governments with environmental discrimination must establish not only that a minority group is being disproportionately impacted by a given decision, but that the officials or government deliberately sought to harm the minority group.

The latter task has proved almost impossible: even the case that gave birth to the environmental justice movement, *Bean v. Southwestern Waste Management Corp.*, ended in failure for the majority-black Houston, Texas, community that was seeking to block a private company from building a landfill in their neighborhood. So did lawsuits related to EPA's and North Carolina's 1982 decision to bury thousands of cubic yards of illegally dumped contaminated soils in the impoverished community of Afton, a majority-black area of North Carolina's most African American county. So too did the King and Queen landfill case in Virginia in 1991.

The language used by judges in these cases over the years is strikingly familiar. In *Bean*, the Houston judge called the city's decision to permit the contested landfill “unfortunate and insensitive” but was unconvinced that it had been “motivated by purposeful racial discrimination.” The King and Queen judge admitted that local landfill siting disproportionately impacted minority communities but contended the decisions were not unconstitutional because they were not “intentionally discriminatory.”

And Dominion officials have consistently rationalized their placement of the Atlantic Coast Pipeline compressor station in Union Hill as a matter of economics and environmental footprint: the other alternative, they have argued, would require 1.1 more miles of pipeline to be built and a corresponding amount of land to be disturbed.

To Mary Finley-Brook, a professor of geography at the University of Richmond and a member of McAuliffe's environmental justice council, though, the impact of environmentally hazardous projects on minority and low-income communities is clear.

"If it isn't deliberate targeting, it's a very obvious pattern," she said.

A Flourish data visualisation

Part of the resurrection of environmental justice in Virginia, then, may be the simple fact that communities dealing with problems on the ground have, after several decades of failure, realized that the laws on the state's books are inadequate — that if they are to fight projects on environmental justice grounds, they must look to the legislature, rather than the courts, for substantive change.

Nowhere has the absence of legislation to guide decision-makers been more keenly felt than in the controversy over the Union Hill compressor station, during which department and appointed officials repeatedly floundered when charged with considering environmental justice concerns.

"The inclusion of the EJ community, I admit, the authorities — various authorities — were late in identifying potential EJ issues," said Richard Langford, chair of the State Air Pollution Control Board, at the Jan. 8 meeting when that body approved the compressor station permit. And David Paylor, director of the Virginia DEQ, told the Mercury recently that the complaints raised over Union Hill had "required that we directly address [environmental justice] in ways that we haven't before."

The ways DEQ chose ultimately landed it, alongside Dominion, in the 4th Circuit Court of Appeals, where [Chief Judge Roger Gregory in October grilled lawyers](#) over why the department and the air board had not been more rigorous in assessing environmental justice concerns.

It's a charge the state has disputed, claiming in a court brief that "while reasonable minds may disagree with the board's ultimate conclusion, the record shows that it fully — and carefully — discharged its legal obligations when it reviewed the challenged permit."

Those legal obligations come down to one [provision of the Commonwealth's Energy Policy](#) that requires that the development of new energy facilities "not have a disproportionate adverse impact on economically disadvantaged or minority communities." That open-ended phrase, which offers neither a definition of "disproportionate adverse impact" nor guidance on how to assess such impact, is the closest state law comes to addressing environmental justice.

"Right now the Code of Virginia doesn't actually contain the phrase 'environmental justice,'" said Crawford, save one reference to the advisory council included in

legislation passed in 2019. Nor, she pointed out, does the state Constitution.

It's a complaint Finley-Brook raised as well: "We don't have any enforceable environmental justice code in the state of Virginia," she said. "We need to go through our books and we need to put environmental justice into every single one with rigor, with measurement and with enforceability."

Striking while the iron is hot

But while Union Hill has become the most prominent environmental justice case in Virginia's history, it alone is not responsible for the uptick in interest, activists and environmentalists said.

"I do think there is a much larger focus and a much larger story," said Robinson. "We have a racism problem in Virginia and in America, and we are seeing the connection of historical racism to disproportionate effects in housing, in energy, in the environment, in health, in education, in transportation and definitely in climate."

Queen Zakia Shabazz, coordinator of the Virginia Environmental Justice Collaborative, a grassroots coalition organized in 2015 and credited by many as a key player in putting environmental justice back on the political map, agreed.

"Environmental justice, racial justice, they all intersect," she said.

In this view, broader nationwide attention to racial inequities flowing from the 2014 Ferguson riots to the debate over Confederate monuments throughout the South has helped foster renewed interest in the ways that environmental hazards disproportionately affect low-income and minority communities.

In the past, "people weren't seeing it, because every community has the part of town with trees and sidewalks and bike lanes, and it has the other part of town that's saddled with the landfill," said Crawford.

Today, however, said McEachin, who along with Arizona Democratic Rep. Raul Grijalva recently released [a comprehensive draft bill on environmental justice](#), "there is a commonality across the country that we've got to fight these problems and we've got to strike while the proverbial iron is hot."

Virginia has proven particularly fertile ground for such dialogue. In 2017, the state was rocked by the deadly Unite the Right white supremacist rally in Charlottesville; the following year, a New York Times report identified the state as having [some of the highest eviction rates in the nation](#), a trend linked by Richmond Mayor Levar Stoney to preferable state treatment of property owners going back to plantation days.

And then, in 2019, as the state prepared to commemorate the 400th anniversary of the first arrival of slaves in the commonwealth, the capital was cast into turmoil by revelations that Northam and Attorney General Mark Herring — Democrats both — had engaged in blackface as young men.

A sign on State Route 663 near Union Hill Baptist Church in Buckingham, one of several in the area opposed to Dominion Energy's Atlantic Coast Pipeline. (Robert Zullo/ Virginia Mercury).

“Virginians had to confront our own racial history,” said Robinson. “It posed an opportunity to Virginia to self-reflect on exactly where we are in our history of dealing with providing solutions to racism.”

Robinson has been particularly critical of Northam’s sincerity in addressing environmental justice.

While delivering the keynote speech of the annual Environment Virginia conference this past March in Lexington after a brief appearance by the governor, [Robinson chastised Northam](#) for both his support for the Union Hill compressor station and his failure to offer “concrete solutions regarding race, equity and the environment, or at least talk through some of the prominent environmental justice issues currently affecting citizens in the commonwealth.” And the governor’s decision [to pull two members off the air board](#) who had expressed concerns about the Union Hill compressor station’s siting as it weighed the Dominion permit also raised major doubts among environmentalists about how seriously he took environmental justice.

The election of Donald Trump to the presidency, too, likely had an effect of galvanizing organizations to action, said Crawford: “I think a lot of it has been a backlash to 2016.”

“Our politicians, they can’t ignore racial justice, they have to respond,” she said. “And one of the ways they’re choosing to respond is saying they’re committed to environmental justice.”

Will it last?

The new flush of optimism seen in environmental justice circles is tempered by a sense of wariness — a skepticism that politicians who speak in support of the movement’s aims aren’t willing to put their money where their mouths are or make the hard decisions environmental justice cases require.

“The fundamentals of environmental justice mean changing power, and they mean changing process and engagement of voices that have been marginalized,” said Finley-Brook.

They also often offer officials a no-win scenario. Deciding which constituents should get which resources, whether money or jobs or government services, is hard enough. Deciding which should suffer is harder still.

Paylor said that DEQ has already taken steps to improve its communication on sensitive environmental justice cases. Besides hiring an environmental justice consultant, he said that the agency has spent the past year “beefing up” its outreach efforts, including developing a more responsive social media presence, reworking its website and adding extra informational meetings not required by law for projects “when we have reason to believe that there’s going to be public interest concerns.”

“We want the public to know what is being proposed and to know that they play a role and how they can play a meaningful role,” he said.

But to some environmental justice advocates, better communication isn’t possible without better representation of minority and low-income communities on state governing bodies.

“When we look at our agency heads, committee chairmen and women, [State Corporation Commission] commissioners, anyone in power to either create, design or implement policymaking, we need better representation of Virginia’s demographics in those arenas, and we don’t see them,” Robinson said. “That’s the first barrier. ... That’s hard. It takes work. But I think as Virginians we need to focus not on doing what is easy, but doing what is right and just.”

Staffing boards and commissions is only the first step, said several activists. The state also has to listen to them.

The concern isn't abstract. While advocates in 2017 hailed McAuliffe's creation of an environmental justice council, attitudes soured the following year when Northam's administration turned its back on the group's recommendation that the state revoke water quality permits for the Atlantic Coast and Mountain Valley pipelines and suspend its Union Hill permit decision.

Tensions only increased when Northam [reconstituted the body](#) and the General Assembly failed to pass legislation that would have made the council permanent.

"There's no teeth. There's no rigor. There's no ability to actually enforce anything," said Finley-Brook, who after serving on the inaugural council was not reappointed by Northam.

The complaint was echoed by others, including Shabazz, who had hoped to see more institutional changes, particularly related to the permitting of new projects, come out of the advisory council.

"The governor has said that (environmental justice is a priority)," she said, "so we are trying to hold him to that. We no longer want to just see things in writing and on paper, but we want to see it in deeds and in action."

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The most important profession fighting sea-level rise you've never heard of

By Sarah Vogelsong - October 2, 2019

VIRGINIA BEACH — Billy Almond knows Virginia Beach.

He knows where the roads meet the water and where, increasingly, the water is rising to meet the roads. He remembers what the city looked like when he was a child on 84th Street, where when he stepped out of the house he saw the Atlantic Ocean in one direction and First Landing State Park in the other. Now the work he's doing is dedicated in large part to ensuring that those two things — land and sea — remain in balance.

“With dollars and engineering, you can probably do anything,” he observed on a sunny Saturday last month inside the Virginia Beach Convention Center, a modern glass and metal building designed to look like a ship, where dozens of members of the Virginia chapter of the American Society of Landscape Architects had gathered for their annual convention. “But at what cost?”

The question isn't rhetorical — especially when posed in the Hampton Roads region, which is experiencing the [second-highest rate of sea level rise in the nation](#), after the Gulf Coast, and is the country's [second-largest population center at risk](#), after New Orleans. Flooding, whether triggered by storms or by winds blowing ocean water north from Albemarle and Currituck sounds (a phenomenon known as “sunny-day flooding” because it has little to do with rainfall), is becoming a regular feature of life in places like Virginia Beach.

Although “climate change” continues to be seen as a political issue to be debated — “I will very rarely mention climate change,” Virginia Beach stormwater engineer C. J. Bodnar said during one of the Virginia ASLA’s convention panels; “I’m not getting into the science, and I’m not getting into the middle of it” — no one in Hampton Roads debates sea level rise. They can all see it. It is, sometimes quite literally, on their doorsteps.

But if the reality of sea level rise represents a rare point of consensus, ways to protect communities against it remain contentious. The “cost” invoked by Almond is more than financial, although the price tags for any solution are enormous, amounting to [billions of dollars](#). It’s also a measure of the risk that attends any bad decision about infrastructure that could route floodwaters away from one place, only to inundate another.

That’s where landscape architects come in.

A profession that focuses on forming and shaping spaces, landscape architecture is architecture with a broader scale, one that incorporates both buildings and the environment that surrounds them. Parks, public plazas, school campuses — all of these places are designed by landscape architects. So too are a fleet of strategies to mitigate flooding, from stormwater management systems to “green infrastructure” elements like [living shorelines](#), marsh restoration and dune enhancement.

“We need to rely on the experts that are out there — the landscape architects, the engineers. We need to bring those folks in to solve those problems, not bureaucrats,” said Del. Keith Hodges, R-Urbanna, whose Middle Peninsula district is also grappling with rising sea levels.

It’s a new level of attention for a group of practitioners that historically has received little. (Even today, many landscape architects, who are licensed in all 50 states and Washington, D.C., say they are confused with landscapers.) But, as C. L. Bohannon, the outgoing president of ASLA’s Virginia chapter and an assistant professor at Virginia Tech, noted, “The challenges of today force us to be out in the forefront.”

‘A better way’ to approach sea level rise

Nowhere have landscape architects been more at the forefront than in their promotion of green infrastructure, a form of design that attempts to mimic naturally occurring features of the environment rather than relying solely on mechanically engineered solutions like sea walls.

If the use of “green” as an adjective invokes a squishy sense of idealism unmoored from the world of data, dollars and cents, it shouldn’t. Green infrastructure may

not be familiar to most Americans, but it's become a foundation of flood defense in one of the world's leaders in fighting rising waters: the Netherlands.

With about [one-third of its land lying below sea level](#), the Netherlands has been devising ways to hold back the waters for centuries. In the 1950s, after a disastrous flood killed an estimated 2,000 people and overran hundreds of thousands of acres of land, the nation embarked on the Delta Works project, constructing a spiderweb of levees, dams and other flood control structures so impressive that the American Society of Civil Engineers in the 1990s lauded it as [one of the seven wonders of the modern world](#).

But while the Delta Works is still key to the Netherlands' flood defenses, climate change has fundamentally altered the Dutch approach to sea level rise. Whatever wall that is built today, [the government has realized](#), will inevitably be overtopped by rising waters tomorrow — and with [growing evidence](#) that [sea level rise is accelerating](#), that tomorrow will likely be sooner than expected.

Consequently the Dutch have turned toward solutions designed less to combat floodwaters than to manage them. Through their (quite literally) groundbreaking [Room for the River project](#), they have reclaimed thousands of acres that can be used as public space during good times and absorb or mitigate high waters during flood times by allowing rivers to spread over their natural floodplains instead of confining them to narrow levee-lined channels that will speed up water flow and pose greater danger to nearby inhabitants.

In Virginia, landscape architects are eager to see some of those solutions applied to the Hampton Roads region. Almond, whose firm has served as a subconsultant on [the multi-year sea level rise study conducted by architecture and engineering firm Dewberry](#) for the city of Virginia Beach, expressed fears about an overreliance on traditional flood control structures like gates and walls, known as “gray infrastructure,” which is also generally more expensive than green alternatives.

“We think there's a better way to do this,” he said.

Construction of the Fog Point Living Shoreline Breakwater on Smith Island in the Chesapeake Bay. Living shorelines, an element of green infrastructure, control erosion and can help act as a buffer against flooding. (Matt Whitbeck/U.S. Fish and Wildlife Service)

Mintai Kim, a landscape architecture professor at Virginia Tech who runs a land planning studio that focuses on large urban environmental issues, has brought students to Virginia Beach for four of the past eight years because the scale of the city's climate change problem makes it one of the best examples of the issues landscape architects are grappling with today.

"Sea walls would be a trap," he said. "The best thing would be to gradually move people out" from the most vulnerable zones, and "as they move out we can restore the landscape," creating a buffer zone.

It's unlikely that Hampton Roads will relinquish plans to build sea walls. Under federal guidelines, Bodnar told landscape architects Sept. 21, "there's got to be some type of structural mechanism" included in flood prevention and mitigation plans.

Attitudes appear to be changing, however. New York's Governor's Office of Storm Recovery after Hurricane Sandy turned to green infrastructure as part of its rehabilitation of Staten Island's shoreline, engaging landscape architecture firm SCAPE to execute its [Living Breakwaters project](#) (the firm also has a hand in a [waterfront effort in Norfolk](#)). Boston's mayor last year announced a major plan to [design waterfront parks as a defense against floodwaters](#).

Collaborations known as the Dutch Dialogues between U.S. landscape architects and policymakers and the Delft University of Technology in the Netherlands have increased awareness in American cities of techniques to stem floodwaters while also developing new public spaces accessible to all. In 2015, the city of [Hampton](#)

hosted a [Virginia session of the Dutch Dialogues](#), prompting both that city and Norfolk to declare a renewed commitment to resiliency.

Even the notoriously conservative Army Corps of Engineers, which oversees the bulk of the nation's major internal improvement programs, [seems to be coming around to green infrastructure](#) as a useful complement to traditional gray installations.

“We want to keep developing, and we want to keep building things, but we want to do it in ways that are sensitive to the environment,” said Jenn Hare, a landscape architect with Timmons Group, a firm that works closely with many local governments across Virginia.

What may be emerging is an acceptance of what has come to be called hybrid infrastructure — an approach that incorporates both green and gray strategies to protect coastal areas from rising waters. Such a strategy uses sea walls and gates as the first line of defense against floodwaters but relies on elements like restored marshlands and living shorelines to slow waters' advance, reduce their force and more quickly absorb their flow so that neither the walls and gates nor the land feel as much of an impact.

Landscape architects, because of what Bohannon called their “synthesizing” nature, may be well positioned to take a lead in such projects. Dewberry's Virginia Beach study, for example, includes [a report exclusively devoted to natural and nature-based strategies](#) for addressing sea level rise, while the national ASLA is [helping push federal legislation](#) encouraging the use of green infrastructure through Congress.

Fragmentation, however, may prove an ongoing problem. Because of their density and greater proportion of public space, cities are currently the most promising avenues for green infrastructure development. But sea level rise afflicts counties as well, where private ownership of waterfront is more common. For context, the Virginia Institute of Marine Science estimates that [85 percent of the Chesapeake Bay shoreline in Virginia and Maryland is privately owned](#).

In Virginia, where [state law encourages the use of living shorelines](#), counties have sought to encourage the adoption of that form of green infrastructure through [shoreline management plans](#). But without a statewide plan, rollout will necessarily be piecemeal.

Health, safety and welfare?

Landscape architects may be a natural choice to help coordinate any large-scale plans to develop green infrastructure in the state. Yet even as their role in

infrastructure planning has become more critical in response to climate change and sea level rise, the state has sought to deregulate the profession.

Since 2010, Virginia has licensed landscape architects in recognition of their influence on the “health, safety, and welfare of the public.” Currently the state is home to 928 licensed landscape architects, a 5 percent increase over 2018 numbers. Nationally, job growth in the almost 25,000-strong field is expected to grow 6 percent by 2026.

Students, said Bohannon, are increasingly interested in the field, arriving with concerns about the environment and “questions I don’t think people were asking 10 years or 20 years ago.”

But lawmakers seem uncertain about what exactly landscape architects do and whether they truly are involved in health, safety and welfare. Legislators have several times added landscape architects to the list of professions that ought to be deregulated, and [an October 2018 report by the Joint Legislative Audit and Review Commission](#) asked that the state formally review its inclusion in the ranks of licensed professions.

“A poorly designed feature, such as a hill with an overly steep grade, could create a safety hazard. Other design flaws, such as improper drainage, could lead to property or environmental damage,” the report conceded. But those risks aren’t fully addressed by licensure, it concluded, “because some of the same work can be performed by unregulated occupations.”

Landscape architects say their architectural training and education puts them more on par with other architects, engineers and surveyors, with whom they work closely on projects. Under state law, a licensed landscape architect’s seal on site or development plans, whether for public or private projects, is considered an official and legal guarantee accepted by local and state authorities. And that’s for very good reason, they argue – just as the public would be at risk from poor design of a sea wall, so would a bad breakwater or a shoreline that increased erosion pose harm to people and the land.

Whether deregulation will occur is uncertain – the Board of Professional and Occupational Regulation is scheduled to begin reporting its findings to the General Assembly by the end of 2019. But Del. Chris Stolle, R-Virginia Beach and a member of JLARC, told Virginia’s landscape architects that, when it comes to their licensure, “You all need to be prepared to defend this every single year. It’s not going to go away.”

Almond, who spent a decade fighting to get the profession regulated, is prepared to continue the battle. Now, watching the contours of his hometown change with

every storm, every southerly wind, he's convinced more than ever of its importance.

“The truth of it is,” he reflected, “in landscape architecture, everything we do is for the next generation.”

Sarah Vogelsong

Sarah covers environment and energy for the Mercury. Originally from McLean, she has spent over a decade in journalism and academic publishing. Most recently she covered environmental issues in Central Virginia for Chesapeake Bay Journal, and she has also written for the Progress-Index, the Caroline Progress, and multiple regional publications.

In 2017, she was honored as one of Gatehouse's Feature Writers of the Year, and she has been the recipient of numerous awards from the Virginia Press Association. She is a graduate of the College of William & Mary. Contact her at svogelsong@virginiamercury.com