As once-bountiful summer flounder leave North Carolina’s shores for cooler waters to the north, a proud fishing town loses out.

Creedence Clearwater Revival’s “Fortunate Son” drifts from Karroll Tillett’s workshop, a wooden shed about half a mile from where he was born.

Tillett, known as “Frog” to everyone here, has lived most of his 75 years on the water, much of it chasing summer flounder. But the chasing got harder and harder, and now he spends his time making nets for other fishermen at his workshop, at the end of a dirt path next to his ex-wife’s house.

The house is on CB Daniels Sr. Road, one of several named after two of the fishing clans that have held sway for decades in this small coastal town. Besides CB Daniels Sr. Road, there’s ER Daniels Road and just plain Daniels Road. In Frog’s family, there’s Tink Tillett Road and Rondal Tillett Road.

Once upon a time, these fishing families were pioneers. In the 1970s and 1980s, they built summer flounder into a major catch for the region. The 15 brothers and sisters of the Daniels clan parlayed the business into a multinational fishing company, and three years ago they sold it to a Canadian outfit for tens of millions of dollars.

But for Frog Tillett and almost everyone else in these parts, there’s not much money to be made fishing offshore here anymore.

Forty years ago, Tillett fished for summer flounder in December and January in waters near Wanchese, then followed the fish north as the weather warmed. In recent years, however, fewer summer flounder have traveled as far south in the winter, and the most productive area has shifted north, closer to Martha’s Vineyard and the southern shore of Long Island.

Reuters has spent more than a year scouring decades of maritime temperature readings, fishery records and other little-used data to create a portrait of the planet’s hidden climate disruption – in the rarely explored depths of the seas that cover more than 70 percent of the Earth’s surface. The reporting has come to a disturbing conclusion: Marine life is facing an epic dislocation.

The U.S. North Atlantic is a prime example. In recent years, at least 85 percent of the nearly 70 federally tracked species there had shifted north or deeper, or both, when compared to the norm over the past half-century, according to the Reuters analysis of U.S. fisheries data. But this great migration is not just off the coast of America. Pushed out of their traditional habitats by the dramatically rising ocean temperatures and other fallout from climate change, summer flounder are part of a global disruption of marine species that threatens livelihoods, cultures and the delicate balance of the oceans themselves.

A mirror image of the flotillas of desperate people trying to escape deadly conflicts, this is a refugee crisis going on beneath the surface of the seas. And much of it has happened in the time it took a child to be born and graduate from high school.

Tillett, threading lead weights onto the bottom of a net, remembers the days of plenty up and down the Atlantic coast, catching summer flounder up north but knowing there were plenty more back home.

“Then, all of a sudden, everything starts moving that way, and nothing is left down here.”

**Breakfast down by the marina**

Few tourists traveling on Route 64 from the North Carolina mainland to the Hatteras beaches venture into Wanchese.

It isn’t even a town, officially. The U.S. Census Bureau, however, says 1,600 people live here, many of them in one-story cinder-block homes, not the big beach houses on stilts, known euphemistically as cottages, a few miles away.

Most mornings, Danielses and Tilletts and Etheridges, another of the fishing clans, crowd the restaurant down by the marina.

Longtime flounder skipper Steve Daniels pulls up. Steve bought his first trawler in 1978 and started flounder fishing that summer. That was the year Wanchese fishermen decided there was money in the fish. In 1977, they had caught zero pounds. In 1978, they caught 12 million pounds, and in 1979, their catch approached 17 million pounds. And that doesn’t count the millions of pounds they landed during the warmer months in Massachusetts, Rhode Island and New Jersey ports.

Over the years, however, the longer trips north needed to find the fish, among other factors, made the fishing increasingly unprofitable.

“There ain’t no flounder around here no more – they all up there in Rhode Island,” Steve says. “I got the hell out of it three years ago.”

**Competing interests and arcane rules**

In the early 1990s, summer flounder stocks were on the verge of collapse after being overfished in the 1970s and 1980s, primarily by Wanchese and other North Carolina fishermen.

Today, after years of severe limits on catches, the species is relatively healthy. Unfortunately for Wanchese, it has rebounded in an area well north of where the crews here started fishing for summer flounder.

But that hasn’t made a difference to arcane rules on summer flounder catches.

Nearly a quarter-century ago, when the fishermen of Wanchese were riding high, the U.S. government set quotas for summer flounder. It dictated that about a quarter of all the flounder caught in U.S. waters must be “landed,” or brought to shore, in North Carolina, no matter where they were caught.

Some modest changes being considered for next year could reduce North Carolina’s landings to one-fifth of the national total. But the very makeup of federal fishery-management bodies has stymied greater changes.

Summer flounder is managed by the Mid-Atlantic Fishery Management Council, one of three federally mandated councils that operate along the East Coast. Each council has about 20 members made up of fishermen, scientists, regulators, ecologists and a strong bloc of wholesale fish dealers. The councils’ size and the members’ competing interests make them slow to act. And often, the fishermen and especially the dealers are reluctant to shift an economic benefit from one region to another, as in the case of summer flounder, whose stock has shifted away from mid-Atlantic waters.

Kiley Dancy, a fishery management specialist with the mid-Atlantic council, says there has been much resistance to shifting the landings to states closer to where the fish are now located.

“Many would like for it to stay the same,” she says. The proposed changes, she says, “better reflect the location of the biomass” – that is, the area where the species is most likely to be found.

If adopted, the changes could take effect in late 2019 or early 2020.

In the meantime, summer flounder continue their inexorable move north. Is it, as with so many other species, because of the warming of the water?

“Absolutely. Looking at the data panorama, actually, I think this is fairly well established. I think that any intelligent conversation kind of starts with that just as a matter of fact,” says Joel Fodrie of the Department of Marine Sciences at the University of North Carolina.

Rutgers University fish ecologist Malin Pinsky has been studying how fisheries have shifted around the North Atlantic for the better part of a decade. It was his work, adapting federal trawler sampling dating to 1968, that first identified where the centers of various species were located and illustrated the wholesale shift of species north.

Pinsky is well aware that fish, which can swim wherever they want, live in complex ecosystems, and attributing those shifts simply to climate change would be oversimplifying matters.

Still, he says, his work shows that temperature change is almost certainly the single largest factor. In 2013, he published a research paper that calculated that 40 percent of the northerly shift was attributed to temperature change.

“Actually, that’s impressively high … that something as simple as temperature explained a lot of the pattern, given that there’s fishing, there’s predators, there’s prey, de-oxygenation, pollution and changing currents. There’s so much going on.”

In the case of flounder, the slow rebuilding of the stock has also resulted in a more mature population than the one that existed in the 1980s, according to trawling surveys conducted by the federal government. And older and larger summer flounder tend to live farther north than younger fish, says Fodrie, the UNC professor, who’s been working these waters for the better part of 20 years.

Regulators vs. fishermen

Among the Wanchese breakfast crowd, few names elicit a lengthier string of expletives than Louis Daniel, former executive director of the North Carolina Division of Marine Fisheries. Many fishermen feel he imposed overly strict management of the local catches when he was in charge.

Daniel, unrelated to the Daniels family, knows he is an unpopular man among commercial fishermen. “They think I wanted to put them out of business, that profit should always be put ahead of protecting the resource,” he says.

But, he says, there is little doubt that there are fewer fish in this region than there once were. And some species have clearly been affected by climate change in the region.

Consider striped bass, which he says is a perfect example of how climate change can dislocate fisheries management.

There was a time, not too long ago, when recreational anglers routinely caught striped bass along the beaches in North Carolina. But since the beginning of the century, the number of striped bass has steadily declined.

“North Carolina has not caught any striped bass in five or six years or more,” he says. “There has been nothing on the beach.”

They are, however, routinely found in Canadian waters, which was unheard of a generation ago.

In early 2010, a small population of the fish was still wintering off the Carolina coast. Steve Daniels took his trawler three miles offshore into federal waters. Over a 10-day period, he illegally caught about 12,000 pounds of striped bass, landing the fish here in Wanchese, according to the United States Attorney’s Office.

Last August, Steve pleaded guilty to the charges and agreed to pay $95,000 in restitution. He was sentenced to five years’ probation.

**Some gambles pay off**

Through the years, the families in Wanchese haven’t been afraid to gamble on a hunch.

Mikey Daniels was in high school when a local named Willie Etheridge Jr. decided to make a go at longlining for swordfish.

“That was ’63, ’64,” he says. “We were stacking them up like cordwood. I mean, three or four hundred fish in a stack, and they did it by hand.”

On Dec. 23, 1970, however, the Food and Drug Administration announced that tests showed that swordfish flesh was tainted with extremely high levels of mercury, a toxic metal. And overnight, the swordfish boom went bust.

It took a few years, but Wanchese’s entrepreneurial fishermen got to work on summer flounder. This time it was Mikey’s father, Malcolm Daniels, who took the lead, after struggling for years. At one point, Mikey remembers, his father was so poor there was a collection in town to raise money to help the family.

Eventually, though, his father bought a 65-foot wooden boat that he converted into a trawler that could drag large nets behind it. And before long, he was buying metal shrimp boats from Texas and converting them to trawlers too.

The family also added a trucking company to drive fish to New York and Boston.

“I was 16 years old driving tractor-trailers. My brothers were too,” he says. “We would get to New York, traveling in a group, you know.

The Daniels siblings took over the Wanchese Seafood Company when their father died in 1986. By the time their mother died in 2006, the family had expanded into boats and seafood wholesalers in Virginia, Massachusetts, Alaska and Argentina. When they sold up, they all became millionaires – a rarity in Wanchese.

The Wanchese fishermen fought hard for their place in the flounder business, but they started fading this decade.

In 2013, fishermen from North Carolina accounted for 64 percent of the summer flounder landed in the state, down from 80 percent just a few years earlier.

By 2016, it was less than half. Fishermen from New Jersey and Massachusetts accounted for 35 percent that year, up from nothing a decade earlier.

**A winner in New England**

On a cold December day hundreds of miles north of Wanchese, snow whips through the New Bedford, Mass., fishing fleet. The wind howls and bangs through the rigging of the boats docked two or three deep along the city’s working piers.

Most of the boats are dark. But the Sao Paulo’s wheelhouse glows orange. Inside, skipper Antonio Borges is preparing to leave as soon as the weather breaks.

The 60-year-old has just returned from 11 days at sea. It could have been a three-day trip if he were allowed to land his catch in Massachusetts, but the law prohibits that.

Instead, he left New Bedford and steamed less than a day before reaching the waters south of Long Island. He dragged his nets in about 50 fathoms of water and filled his hold with summer flounder. Then he turned south for a couple of days to offload some fish in Virginia. Two days after that, he offloaded flounder at the Beaufort, N.C., docks, before turning around and heading home.

A day after tying up in New Bedford, he’s back on the boat getting ready to go to sea.

Borges is fortunate that he can even catch the summer flounder: He bought landing permits from North Carolina and Virginia fishermen. In a perfect world, he says, Massachusetts and other New England and mid-Atlantic states would have a bigger quota.

Still, Borges says he doesn’t mind. He owns a boat large enough to make those trips, even in the foulest of winter weather. And besides, he’s invested in the status quo – he paid for one of those landing permits.

So, even though his time on the seas would be much shorter, he said the distributions of landings shouldn’t change. “It’s not going to happen, and it shouldn’t happen,” he says. “Because the states that we bought the license from, we already knew that we had to go to those states and deliver the fish.”

Traveling the distance from the Northeast to North Carolina benefits fishermen like Borges in bigger boats. At 75 feet and specifically designed for fishing on the high seas, his would loom over many of the flounder trawlers that steamed out of Wanchese in the 1980s.

Plus, he says, the Wanchese fishermen established the business and the North Carolina economy is entitled to benefit from that work, even if it’s no longer feasible for the fishermen to work the waters as much as they once did, he said.

“We go to North Carolina, we bring jobs,” he says. “Wherever we go, we bring business: lumpers to unload the fish, truckers to truck the fish, fuel, food. The economy grows wherever a fishing boat goes. It brings business, and we shouldn’t change that.”

Outside, the snow turns the docks and the decks white. The Portuguese immigrant shrugs.

“Look, it is 21 degrees today. Oh my God, it’s cold. You know what? This harbor used to freeze every single winter. It would freeze for weeks on end.”

Now it doesn’t.

Borges was 18 when his father took delivery of the Sao Paulo in 1977 from a Louisiana shipyard.

Since then, he has married and had two daughters. They married and had three daughters. Now, at the tail end of his career, he reflects on what has changed.

“Forty-two years I have been doing this, 60 years old, and I still love it.”

The most notable change, he says, is that fishermen are no longer the biggest threat to fisheries.

“We were the problem, in the ’70s and ’80s. We grew so much that we became a problem, and if the laws didn’t change, yeah, we were going to catch the last fish, I guarantee you we were.

“But you know what? We’re not the problem now. Climate change is the problem now. It is climate; it is water temperature. There are southern species that are coming north, and the species that were here have moved north.”

Adjust exposure for previews

You can adjust the exposure (in f-stop units) for previews with the Adjust Exposure control, which is located to the right

of the Reset Exposure button at the bottom of a Composition, Layer, or Footage panel. Each viewer can have its own

Adjust Exposure setting.

When the Adjust Exposure control is set to a value other than zero, the Reset Exposure button is blue.

The Adjust Exposure control doesn’t affect final output, only how video appears during previews. To make tonal

adjustments to a layer that appear in the final output, use the Exposure effect.

The Adjust Exposure control is useful for finding the black point or white point in an image. For example, drag the value control to the right (positive values) until the entire image is white except for one area; that area is the darkest area in the image.

To check the quality of a composite, drag the Adjust Exposure control far to the left and far to the right and look for places where the composited elements differ too much in color or luminance. This technique—sometimes called gamma slamming—is useful for ensuring that a composite will look good and be convincing in contexts other than the one in which

you’re working. For example, a composite that is adequate in a dark scene may be less convincing when the scene is colorcorrected

to brighten the scene.

• To adjust exposure for a viewer, drag the Adjust Exposure control to the left or right, or click the control and enter

a value in the box.

• To reset exposure, click the Reset Exposure button. To return to the most recent non-zero setting, click the button

again.

Rouleaux de printemps

Des rouleaux de printemps aux crevettes.

Chef Simon Préparation : 20' Facile

1 - Réunir tous les ingrédients. Ciseler la salade et les oignons blanc, râper les carottes, trancher l'avocat en fines lamelles et citronner pour éviter l'oxydation.

2 - Nettoyer et ciseler grossièrement la coriandre fraîche ou une autre herbe aromatique de votre choix.

3 - Décortiquer les crevettes cuites.

4 - Tremper une galette de riz dans l'eau froide. Elle devient molle en moins d'une minute. égoutter pour ôter l'excés d'eau.

5 - Cuire le vermicelle 2 mn à l'eau frémissante.

6 - étaler la galette de riz délicatement sur votre plan de travail et ajouter les ingrédients choisis en haut et au centre de la galette.

7 - Vous pouvez aussi étaler la galette sur une serviette propre qui absorbera l'excédent d'eau.

8 - Comme pour les nems replier un côté de la galette

9 - Puis l'autre. Attention la galette de riz est fragile.

10 - Replier ensuite le haut de la galette et rouler délicatement.

11 - Poser les rouleaux sur une assiette humidifiée et sans qu'ils se touchent pour éviter qu'ils restent collés en séchant.

12 - Décorer avec un peu de salade ciselée et servir avec une sauce de votre choix.

Recette pour 8 rouleaux de printemps

16 crevettes - 8 galettes de riz - 2 petites carottes râpées - 2 oignons blancs nouveaux - 1 petit pot de pousses de soja - coriandre fraîche - 40 g de vermicelles de riz - un avocat mûr à point.

Pour la sauce

3 cuillers à soupe de nuoc-mam - 1 cuiller à soupe de vinaigre de riz - 1 jus de citron vert - 1 cuillère à café de miel liquide - un peu de pâte de curry vert.