

Biologically rich surface slicks are more than meets eye

By Timothy Hurley

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They're sometimes mistaken for boat wakes or oily pollution, but they're actually called surface slicks — thin ribbons of smooth water that appear in Hawaii's nearshore waters at almost any time of year when conditions are right.

Turns out they're more than just fleeting features on the surface of the ocean.

New research has found that just below the surface is an amazingly diverse nursery habitat for more than 100 marine species, from nearshore reef fish to commercially important deep-water varieties.

“It was an incredible surprise, the densities of fish we found compared to other waters,” said Jonathan Whitney, a marine ecologist with the University of Hawaii and NOAA's Joint Institute for Marine and Atmospheric Research.

Whitney led a team of Hawaii-based scientists that documented the ecology of the surface slicks, producing a research paper that was published Thursday in the journal *Scientific Reports*.

It is the same team that produced a scientific paper in 2019 that found that young fish were eating the plastics that would accumulate in these ocean slicks.

Surface slicks are naturally occurring ribbons of smooth water at the ocean surface that are seen in coastal areas around the world. In Hawaii they are formed when underwater waves converge near coastlines.

These ribbons of water are not always visible to the eye, but can be

seen, especially if it's not too windy.

While prior research has illustrated the biological draw of surface slicks in a temperate region, the importance of surface slicks to developing larvae in tropical and subtropical areas was largely unknown until now.

Working in waters off West Hawaii, the researchers used fine-mesh nets to survey the surface slicks from Puako to Milolii, all within 4 miles of shore, from 2016 to 2018.

They also examined data from satellite images taken by Greg Asner's Global Airborne Observatory, a twin-engine turboprop based in Hilo and operated by Arizona State University.

The study concluded that the plankton-rich surface slicks act as a nursery habitat for marine larvae in at least 112 species, a congregation of diverse creatures that include coral reef fish, open-ocean predators, deep-water fishes and even invertebrates such as snails, crabs and shrimp.

“The diversity of species was crazy,” Whitney said.

The slicks, he said, are “an interconnected superhighway of rich nursery

habitat” that draw a huge number of young fish — an estimated 10% of all fish species recorded in Hawaii — to an area of the ocean that features large

our oceans.

Asked whether the plastic actually provides a positive

concentrations of food and shelter.

He described the slicks as moving highways of plankton that bridge the pelagic and coral reef ecosystems.

IN THE study, the researchers found that while surface slicks covered only an estimated 8% of the ocean surface in the 380square-mile study area, they were found to have a disproportionately dense composition.

The slicks held 39% of the area's surface-living larval fish and more than 26% of the zooplankton that larval fish eat.

“Our findings suggest that slicks play a critically important role in enhancing productivity in tropical marine ecosystems,” the study said.

In addition, the results of the project indicated that young fish actively seek out surface slick habitats not only to capitalize on the ample availability of prey, but to take advantage of the shelter they can find.

An estimated 75% of the study area's floating organic debris, such as feathers and leaves, was found bobbing in the slicks, according to the study.

BUT THE shelter wasn't just made up of the organic stuff. The researchers said they found plenty of floating plastic, the pollutant identified as a growing problem in

function here, Whitney said it can and it does.

“You pick up a milk carton and you see a bunch of fish,” he said.

But marine animals were using the surface slicks as a nursery long before plastic showed up, Whitney said, and the fish certainly would be better off without it, considering the potential hazards, which include chemical exposure and the toxicants from their consumption.

With these slicks having been found to be key to sustaining fish populations, should boaters try to avoid them?

Whitney said that after realizing how rich in life they are, the research team tried to go around them — but it was hard.

“It's tricky because they're everywhere,” he said.

The bottom line for now, he added, is there's no evidence that points to any impact on the surface slick population.