

# Thaxton: What Fishermen Know About Red Tide

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The recent red tide outbreak created a firestorm of reactions not seen on Florida's southwest coast since 2004, the last time an intense, long-lived red tide impacted the area. But what's most important about these two milestones is what happened between the two events.

My earliest memories of red tide date back to my childhood, when I would hear firsthand accounts of red tide coming ashore from the commercial fishermen docking their boats at the Vamo and Osprey fish houses.

In the late 1960s commercial fishing was still a thriving business in this area, and the industry's connection to our local waterways was direct and meaningful. The commercial fishermen seemed to have a sixth sense when it came to understanding the relationship between land, water, weather and fish.

While there was no shortage of "inspired" language used at the fish houses, I never heard a commercial fisherman use terms such as "stormwater pollution" or "nutrient loading." Yet these third- and fourth-generation fishermen were remarkably accurate in describing their intuitive beliefs that the loss of mangroves and "piney woods" to suburban development was responsible for the reduced catches they were experiencing.

By the early 1980s, Sarasota's bays were unrecognizable from their condition just one generation past. Tourism, home sites, waterfront dining, and water-related recreation soon replaced commercial fishing as the top money-producing waterfront uses.

But just like commercial fishing, these new industries depend on healthy beaches, bays and estuaries to thrive, and now represent essential revenue sources to our local economy and tax base, as well as critical jobs that support thousands of local families.

Research suggests that red tide is a naturally occurring phenomenon that has been a part of the Gulf of Mexico's natural ecological balance since before Europeans populated coastal U.S. states.

Red tide "blooms" start many miles offshore, well beyond the area impacted by land-based human activity. Offshore red tide blooms are enabled by iron carried into the sea from Saharan desert sandstorms. This iron is then transformed by a marine micro-organism (*Trichodesmium*) into a food source consumed by other marine organisms, including the culprit that causes red tide, *Karenia brevis*.

With the right combination of current and wind conditions, these naturally occurring red tide blooms drift landward, and there they come into contact with a human-generated condition — nitrogen-enriched seawater.

While nitrogen is a naturally occurring element in the sea, excessive amounts of nitrogen become a pollutant proven to be responsible for many unhealthy and sometimes toxic marine conditions.

*Karenia brevis* is known to thrive in nitrogen-rich environments, especially those forms of nitrogen that originate from urban and agricultural fertilizer, stormwater runoff and poorly treated sewage effluent.

Data suggest that the presence of near-shore, human-sourced nitrogen causes a naturally occurring red tide event to become more severe in intensity and extend over a larger area of our coastline for longer periods of time.

Our ability to influence African dust storms and naturally occurring water conditions some 50 miles offshore is either cost-prohibitive,

next-to-impossible or involves tampering with natural events that we shouldn't be messing with.

However, preventing nitrogen and other pollutants from entering our natural waterways to begin with is cost-effective, and we have the science and technologies to do it now.

Not coincidentally, it's the time between red tide outbreaks when we see an erosion of the rules that reduce the amount of nutrients and other pollutants from entering our waterways.

Even a casual observer can construe that no one is talking about weakening the laws that protect our public waterways when red tide is dominating public discourse. But when red tide is not front-of-mind, weakening or even eliminating pollution discharge regulations is a popular activity.

For example, in 2010 Florida's five water management districts convened the most experienced stormwater experts to draft an evidence-based update to the state's stormwater design standards.

The new standards, if adopted, would have reduced the land-based pollutants that exacerbate harmful algae blooms and bacteria-related beach closures. The update was shelved for political reasons, and never saw the light of day.

As hard as it may be to imagine now, this vivid, sensory-shattering red tide event will soon be a faded memory and the laws that protect our waterways and public health will once again be under siege.

The time to act on activities that could potentially ease the impacts of these extended red tide events and bacteria-induced beach closures should not be limited to when we are in the throes of a crisis. It should be part of our everyday activities and policy-making decisions when the waters appear clean and blue.

Buck, Boaty and Mutt may not sound like credentialed marine scientists, and they're not. They are the names of real-life local

commercial fishermen who had a generational connection to the water and the landward areas that impacted the sea. And their assessment that land-based human activities could be devastating to the health of local waterways was spot-on correct.

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