

## The Economic Ripple Effects of Florida Red Tide

Harmful algal bloom events such as Florida Red Tide have impacted coastal areas in Florida at least since 1844, when observers noted a bloom event off the coast near Panama City. A dinoflagellate, *Karenia brevis* produces neurotoxins that create massive fish kills, as well as increases in mortalities in marine mammals, sea turtles, birds, and impacting crustaceans and other benthic organisms. Occurring offshore in the Gulf of Mexico, Florida Red Tide blooms encroach on the state's nearshore waters, impacting coastal communities.

While Florida Red Tide is naturally occurring there is evidence that discharges from urban type development such as stormwater runoff, leaking sewerage systems and septic tanks from the Mississippi River and northern Gulf of Mexico watersheds aggravate Red Tide events. Offshore activities such as oil platforms and fishing waste products and even dust blown across the Atlantic from the Sahara desert also contribute to Red Tide's impact. Beginning in November 2017, the latest Florida Red Tide bloom has since impacted over 100 miles of Florida's coastline.

Florida's tourism-related businesses are particularly affected by Red Tide blooms, as dead marine animals continue to wash ashore, and public health advisories are posted for beach activities and shellfish consumption. The damage to the food chain and the respiratory pollution caused by the smell of large amounts of decomposing marine life discourages tourism and is harmful to the fishing industry. Shellfish borne illness, respiratory problems, and the decline in hotel stays and holiday rentals have significant cumulative direct and indirect impacts on the Florida economy.

### Business Damage Assessment Survey

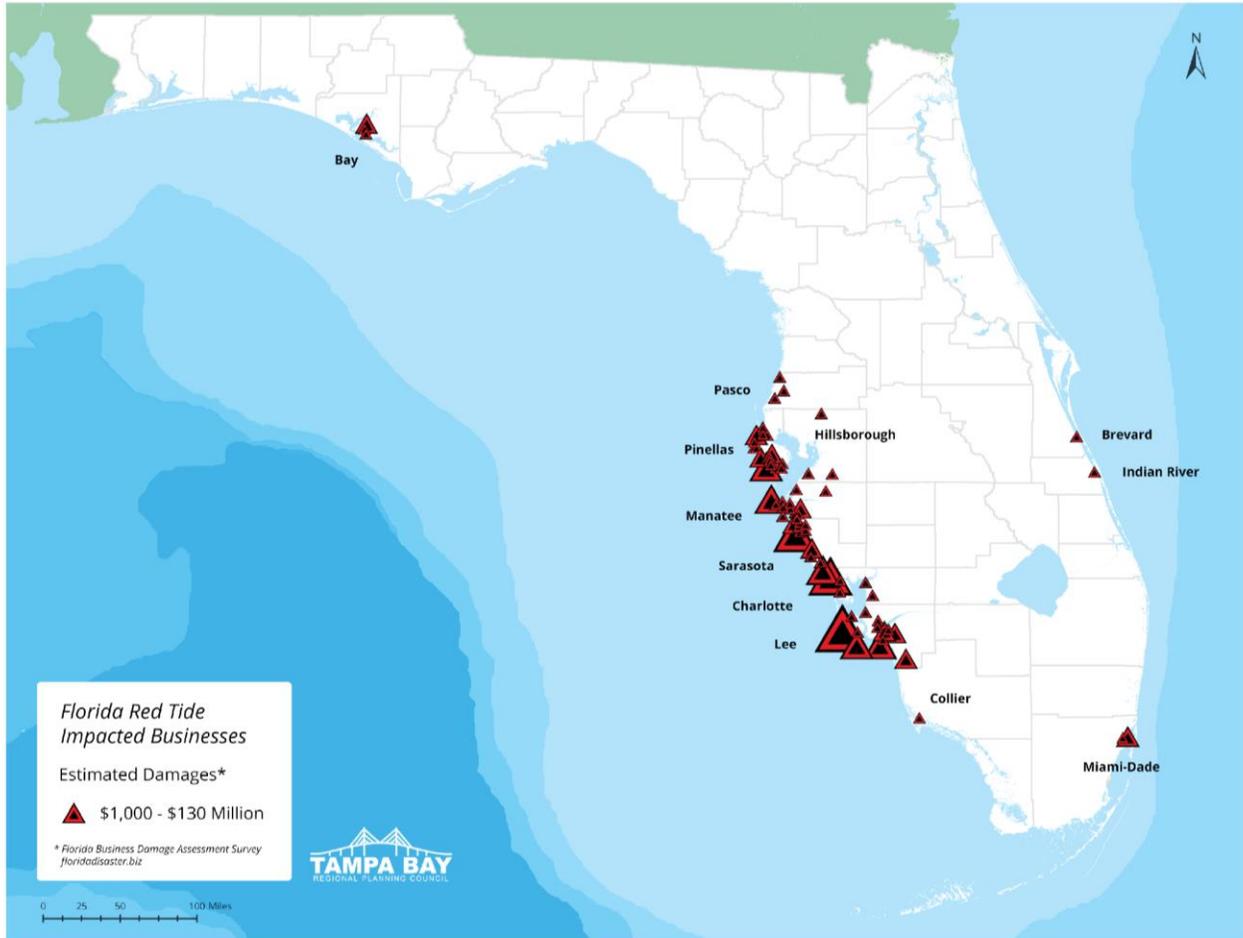
Tampa Bay Regional Planning Council (TBRPC) used data from the Florida Department of Economic Opportunity and the Florida Division of Emergency Management's Business Damage Assessment Survey<sup>1</sup> to estimate economic damages related to Florida Red Tide, including business expenses, sales revenue, and employment impacts. Since the Business Damage Assessment survey responses are self-selected, voluntary and are unverified by state agencies, TBRPC assumes that survey results can only provide a broad picture of Red Tide impacts.

During the survey period, from August to December, 2018, 246 survey responses were received from the following counties: Bay, Broward, Charlotte, Collier, Hillsborough, Indian River, Lee, Manatee, Miami-Dade, Pasco, Pinellas, and Sarasota. According to the survey results, the total estimated costs of physical and economic damages self-reported within the twelve counties is approximately \$130.6 million. Figure 1 illustrates the geographic distribution of estimated damages reported across Florida, and Figure 2 depicts the frequency of survey responses during the time period.

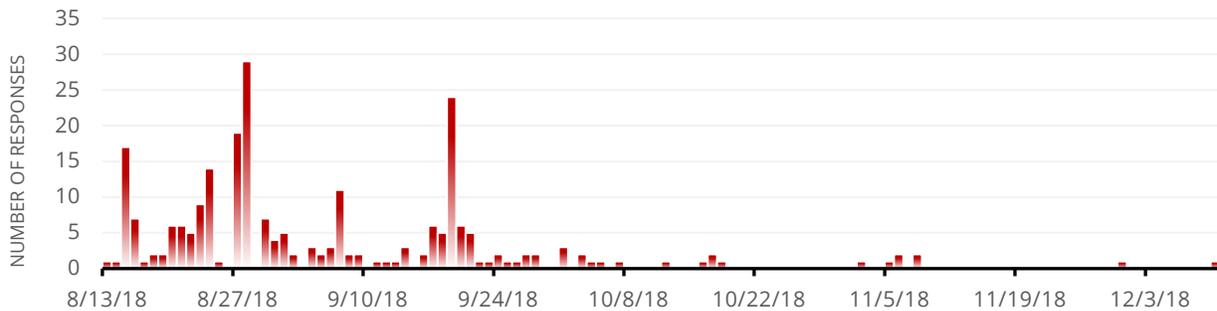
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<sup>1</sup> <https://www.floridadisaster.biz/BusinessDamageAssessments>

**Figure 1. Estimated Damages Reported Across Florida**



**Figure 2. Frequency of Survey Responses**



Using survey respondent estimates of lost business sales compared to an equivalent period in the preceding year, the Tampa Bay Regional Planning Council (TBRPC) conducted an analysis of the economic impacts of the latest Florida Red Tide bloom, using a highly respected economic impact model. TBRPC classified responding businesses by industry sector and then modeled the loss of firm sales against a baseline of normal economic activity.

## Findings

Not-surprisingly, the industries most impacted by this year’s Florida Red Tide are rentals such as vacation homes and charter boats, hotels and restaurants. Table 1 summarizes the economic model’s impacts of the twelve directly affected counties in terms of loss in employment, personal income, and Gross County Product, a county sized version of Gross National Product, across all industry sectors.

<i>Table 1. Economic Summary</i>	<i>12 Directly Impacted Counties</i>	<i>Rest of Florida</i>	<i>All of Florida</i>
Total Employment	-632	94	-538
Gross County Product (Millions)	-\$72.4	\$14.5	-\$57.9
Personal Income (Millions)	-\$24.0	\$3.2	-\$20.8

Source: TBRPC, 2018

Economic model results are consistent with survey respondents reports of 626 temporary and permanent lay-offs from Red Tide impacts. While this does not resolve the question of whether all impacted firms responded to the survey, the economic analysis does help capture the overall impacts of losses from participating firms.

Even though there is a net job, personal income and Gross State Product loss from Florida Red Tide, the model suggests that impacts vary across the state. For non-coastal counties with no direct reported impacts from Red Tide there are modest gains in jobs and income. That is because some purchases in an impacted coastal community may be substituted or partly offset by spending in another and unaffected community. When visitors avoid spending money in areas impacted by Red Tide they spend their money elsewhere, generating economic activity in those other places.

Peaking in October 2018, this episode of Red Tide has receded after thirteen months of significant damage to marine life and coastal businesses. In the meantime, local governments have cleared the beaches of tons of debris. While scientists do not anticipate a return of Red Tide impacts of this magnitude in the near future it is highly likely to impact Florida communities again in the coming years.

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