

RECENT & ON-GOING ECONOMIC STUDIES CONCERNING RED TIDE EVENTS IN FLORIDA

Chuck Adams

Florida Sea Grant, Prof.

Sherry Larkin

Associate Prof.

Bob Degner, Kim Morgan, Brian King

Prof., PhD Asst., MS Asst.

Food and Resource Economics Department

Institute of Food and Agricultural Sciences

University of Florida, Gainesville, FL



MOTIVATION

Posted 24 July 2006 on redtidealert.com:

“...Thank goodness I enjoy cooking and had planned to do some on vacation, because **even at the local restaurants you could not escape the smell.** My husband travels for a living and is gone a lot. Our vacations are precious time together and we plan them well. I understand Red Tide is a natural occurrence. **Is it too much to ask to clean-up the obvious health hazard it leaves behind?** Our family vacation was more than a disappointment. I will never go there again. No thank you Florida. Gina Halliwell.”

RESEARCH PURPOSE AND OBJECTIVES

Research Needs:

- * Understand changes in *behavior* by residents & tourists
- * Determine *detailed* spatial and temporal effects
- * Determine actual costs to manage HAB events
- * Assess health-related costs absorbed by local communities

Outcomes:

- * An increased ability to conduct more accurate assessments of the changes in expenditure patterns and underlying demands associated with marine-related activities and water-proximate business patronage
- * Allow local decision makers to better allocate scarce funds for HAB management

TWO STUDIES FUNDED: 1999 and 2000

(Florida Marine Research Institute – HAB Task Force)

Study 1 - Develop a methodology for assessing economic consequences of red tide in SW Florida (Sarasota / Manatee Counties)
(1999)

Study 2 - 1. Measure the economic consequences of red tide events in Panhandle Florida (Ft. Walton Beach and Destin)
(2000)

2. Assess public awareness of red tide in SW Florida

STUDY 1

KEY ECONOMIC FINDINGS

Sarasota/Manatee Counties: beach attendance...

- Negative and statistically significant decline in average monthly attendance for **Sarasota** beaches during red tides (13.5% decline ~ **50,000/mo**)

business activity ...

- No statistically significant link between business activity and red tide events (*likely due to monthly resolution of sales data*)

KEY ECONOMIC FINDINGS

cont'd ...

Ft. Walton Beach / Destin: business activity...

- No beach attendance analysis possible
- Statistically significant **negative impact** on business activity during red tide events:

Restaurants → \$2.8 million monthly loss (29%)

Hotels → \$3.7 million monthly loss (35%)

STUDY 2

PUBLIC AWARENESS SURVEY

(Manatee / Sarasota Counties)

- 89% of respondents aware of “red tide”
- Sources of information: TV, radio, & newspaper
- Most respondents had a basic understanding of the basic biology of red tide events
- Though over 80% were aware of the dangers of eating shellfish during a red tide, about the same percentage felt **similar dangers exist from eating finfish, shrimp, and crab** during a red tide

SURVEY FINDINGS cont'd ...

Red Tide Awareness (% wrong or didn't know):

shrimp / crabs safe to eat during a red tide?	(90%)
locally caught finfish safe to eat during a red tide?	(87%)
safe for humans to swim during a red tide?	(82%)
red tides begin in bays, estuaries and near beaches	(60%)
red tides cause lasting health problems	(55%)
red tides occur mostly in the fall and winter	(47%)
red tides are caused by tiny marine plankton	(42%)
red tides can be controlled by chemical treatments	(41%)
red tides never last more than 1-2 weeks	(39%)
red tides only affect people in the water or on the beach	(34%)

SURVEY FINDINGS cont'd ...

Effect of Red Tide on Water-Related Outdoor Activities:

	<u>Changed?</u>		<u>How So?</u>		
	<u>Yes</u>	<u>No</u>	<u>Cut Short</u>	<u>Delay</u>	<u>Go Elsewhere</u>
Saltwater fishing from boat	53%	47%	17%	56%	27%
“ “ “ shore	63	28	23	55	22
Beach-going / swimming	70	30	24	59	17
Sail / power pleasure boating	54	46	21	56	23
Sail-boarding / surfing	62	38	44	50	6
Scuba diving / snorkeling	48	52	19	65	16

SURVEY FINDINGS cont'd ...

Effect of Red Tide on Water-Proximate Business Patronage:

	<u>Changed?</u>		<u>How So?</u>	
	<u>Yes</u>	<u>No</u>	<u>Postponed</u>	<u>Go Elsewhere</u>
Restaurants	36%	64%	37%	63%
Lodging (hotels and motels)	23	77	57	43
Fish/Seafood Retail Stores	29	70	64	36
Other Retail Stores	24	76	59	41

SUMMARY OF RECENT RESULTS

- First-round economic losses due to red tide measured
- **Ability to measure economic consequences a function of economic characteristics of region and available data**
- Though most Sarasota / Manatee Counties residents are aware of red tide... educational opportunities exist
- **Outdoor activities impacted by red tide more so than business patronage**
- Though delaying / postponing activity or patronage is most common strategy, significant % take business elsewhere

ON-GOING STUDY

“The Economic Effects of Harmful Algal Blooms on Coastal Communities and Shellfish Aquaculture in Florida”



OBJECTIVES

1. To estimate the reduction in daily restaurant receipts during red tide events (**primary, firm-level data**)
2. To measure the probabilistic behavioral response to red tides by activity (**primary, survey data from SW FL**)
3. To calculate the public costs associated with red tide events (**primary, 3a-survey of 9 SW counties and selected cities, 3b-survey of hotel managers in Lee County**)
4. To calculate the average annual losses to shellfish aquaculture operations (**primary, survey of dealers**)
5. To estimate the impact on beach/park attendance (**secondary, 4a-Lovers Key Park, 4b-6 Sarasota beaches**)
6. To estimate the monthly reduction in restaurant and lodging revenues (**secondary, data for over 100 zip codes**)

METHODS

Primary Data:

- Firm-level restaurant sales
- Surveys of public resource managers, hotel managers, shellfish dealers, and residents (for costs, expenditures, behavior, losses, etc.)

Secondary Data:

- FDOR monthly sales by more zip codes and more recently
- County and state beach/park attendance
- FWRI and NOAA red tide data
- Environmental data (temperature, rain, etc.)
- Public information data (newspaper “hits”)

PRELIMINARY RESULTS

- **Estimated average daily sales reduction during a red tide event, regardless of intensity, season, and location: US\$616/restaurant (5%-14% of average)**
- **Annual revenue loss estimated for the restaurant sector in the localized study region: US\$1.8 million (260 restaurants; 11.3 red tide days per year)**
- **Hard clam dealers lost an average of \$21K in gross sales (\$8.3K in net sales) per week of a closure due to red tide in 2005, primary concern is regaining markets**
- **Approximately half of beach goers, saltwater fishermen, and beachside restaurant patrons that were affected by red tide opted to cut-short or delay their expenditures; the probability models will measure the response by characteristics of individuals for each activity**

OVERALL CONTRIBUTION OF UF STUDIES

- Provide quantitative evidence of the extent that red tide events have (1) changed resident behavior and (2) impacted associated businesses
- Provide qualitative evidence of effective educational messages
- Provide a justification for funding levels for red tide research, management, mitigation, and public outreach and education

For more information: Chuck Adams (cmadams @ ufl.edu)