

FDACS Apalachicola Bay Water Quality Sampling

Carrie Jones
Environmental Supervisor II
Carrie.Jones@FDACS.gov
850-653-8317



National Shellfish Sanitation Program

- ▶ Establish minimum requirements to **regulate interstate commerce of shellfish** – NSSP Model Ordinance
- ▶ **Protects public health** by ensuring the harvest of shellfish are from properly classified waters and shellfish are handled properly at all levels from harvest to final sale to the consumer.
- ▶ **US Food and Drug Administration oversees** and ensures compliance of the NSSP by all member states through annual audits





FDACS conducts routine surveys and water sampling in shellfish harvesting areas for lease areas and wild resources.

Water Quality data management-
open/closure of shellfish harvesting
areas

- Sample strategically placed water quality monitoring stations
- All water samples sent to the Apalachicola Shellfish Lab for analysis



What are the goals of classifying and managing shellfish harvesting areas in Florida?

- To maximize the acreage to allow for the harvest of shellfish
- and
- To minimize the number of days closed while
- Protecting the health of consumers from shellfish born illnesses





Water Sample Collection



Pollution Source Survey

- Identifies all potential direct and indirect pollution sources within the drainage basin surrounding the harvest area
- Examples include marinas, wastewater treatment plants, septic tanks, stormwater runoff, livestock, wildlife
- Achieved by infield and Google Earth observations and by working with other state and local agencies to identify local pollution sources



Fecal Coliform Bacteria: Indicator Species

- Fecal coliform bacteria are a group of bacteria excreted in feces by warm blooded animals, including humans, domestic animals and wildlife
- When fecal coliform bacteria are present, human pathogens may also be present



Water Quality Testing

- Division of Aquaculture, Shellfish Laboratory in Apalachicola
- Water samples shipped overnight via UPS or same-day delivery if samples are local
- Samples must be maintained between 0⁰C and 10⁰C
- mTEC is method used – filter water onto filters, incubate 24 hours and then count the number of yellow/green colonies
- Results are emailed back to regional offices ~48 hours later



Water Quality Data Analysis

- Data taken at each station is entered into a database and analyzed to assess trends in fecal coliform bacteria
- Statistical Analysis Software (SAS) is used to identify correlations between rainfall/river levels and bacteria levels at all stations



Water Quality Data Management

- The correlations found in the data allow personnel to create management plans
- Rainfall and/or river levels are collected daily at specific gauges and entered in the database
- Use statistical analysis to assess:
 - Correlations between FC and rainfall/river levels
 - Trends over time (*i.e.* is water quality improving or degrading)
 - Determines the most significant model (station) that sets the management plan closure criteria
 - SHA classification map



Management Plans

- A management plan sets forth certain closure criteria using rainfall and river levels
- Management plans are verified each year with annual and triennial reports
- Comprehensive Surveys are done every twelve years per NSSP or sooner if warranted

Water Quality Data Management

- When closure criteria is exceeded (*i.e.* too much rainfall or a high river is recorded) field staff close specific harvesting areas at sunset
- Sampling to reopen a closed harvest area is initiated immediately and continues until bacteria levels fall below management criteria



NSSP Shellfish Harvesting Area classification types

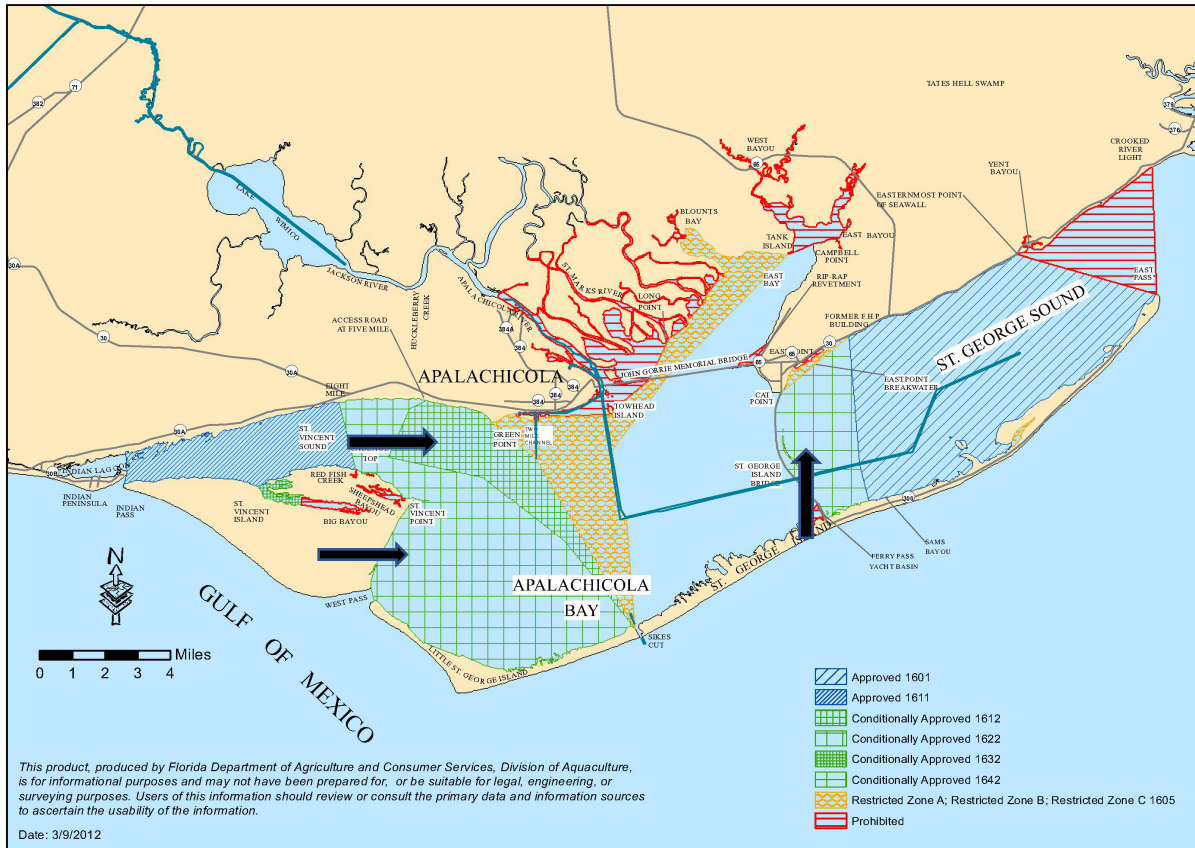


- 5 different classification types – determine harvest restrictions
- Classification types are based on:
 - FC water quality
 - Proximity to pollution sources



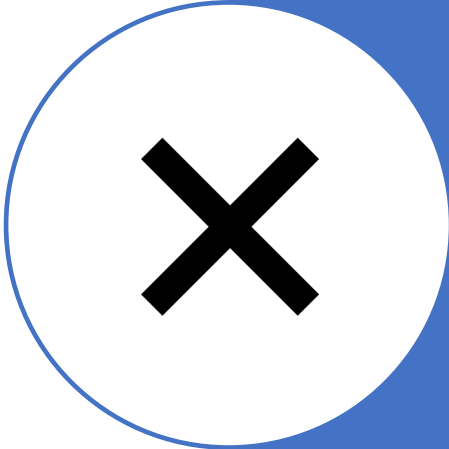
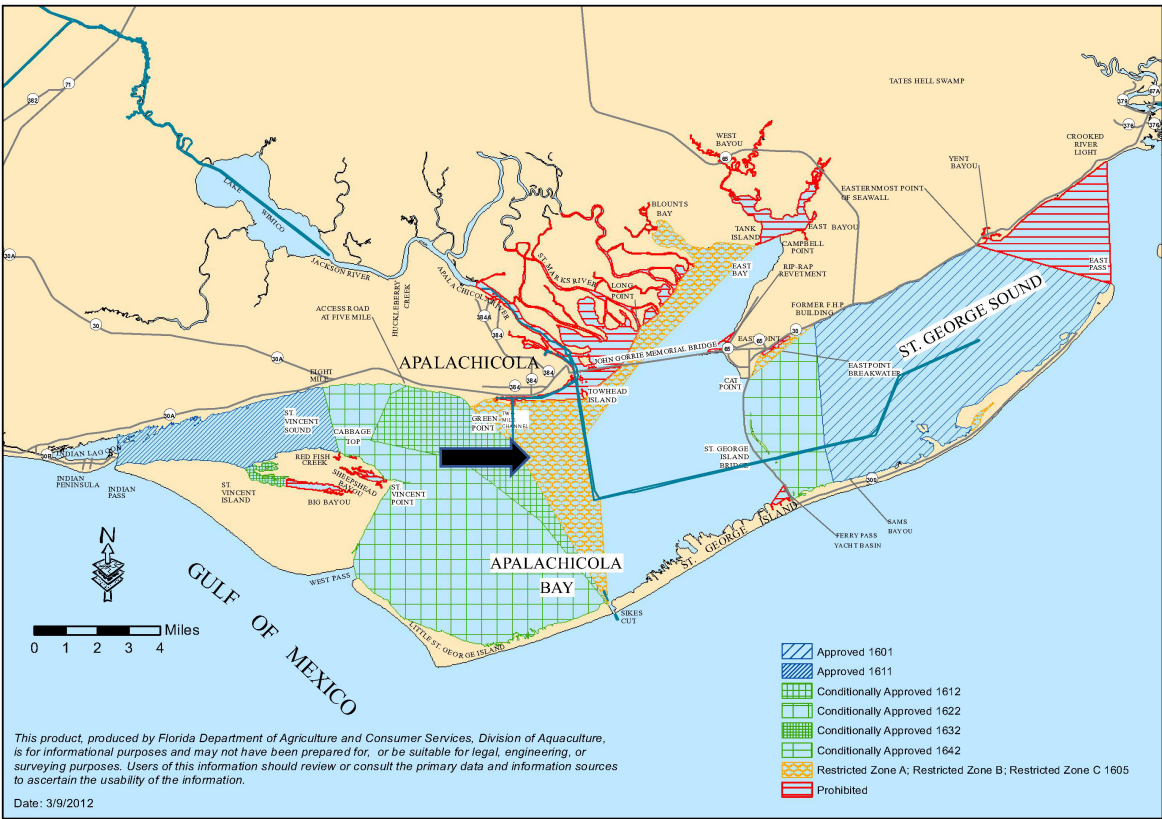
Conditionally Approved Areas

SHELLFISH HARVESTING AREA CLASSIFICATION MAP #16A (Effective: February 9, 2011)
 Apalachicola Bay System (#16) Shellfish Harvesting Area in Franklin County
 Winter: January - May, September - December



Restricted/Conditionally Restricted

SHELLFISH HARVESTING AREA CLASSIFICATION MAP #16A (Effective: February 9, 2011)
Apalachicola Bay System (#16) Shellfish Harvesting Area in Franklin County
Winter: January - May, September - December



This product, produced by Florida Department of Agriculture and Consumer Services, Division of Aquaculture, is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Date: 3/9/2012



Management of Shellfish Harvest Areas

Temporary closures

- Management plan exceedance – rainfall or river levels
 - Most common type of closure
- Emergency conditions – untreated sewage spills, tropical storms/hurricanes
- Harmful Algal Blooms
 - *Karenia brevis* (Red Tide) – Neurotoxic shellfish poisoning
 - *Pseudo Nitzschia* spp. – Amnesic shellfish poisoning
 - *Pyrodinium bahamense* – Paralytic shellfish poisoning



How do we determine management plans are working?

- NSSP requires each area to be sampled at least 5 times per year under Adverse Pollution Conditions (APC) when in the open status:
 - Sample following a rainfall event or when river levels are elevated
 - Determines if the area is in compliance with NSSP water quality standards under the current management plan
 - Updated each year with an annual report and pollution sources are re-evaluated every three years in triennial reports
 - Comprehensive shellfish harvesting area survey to be done at minimum every 12 years



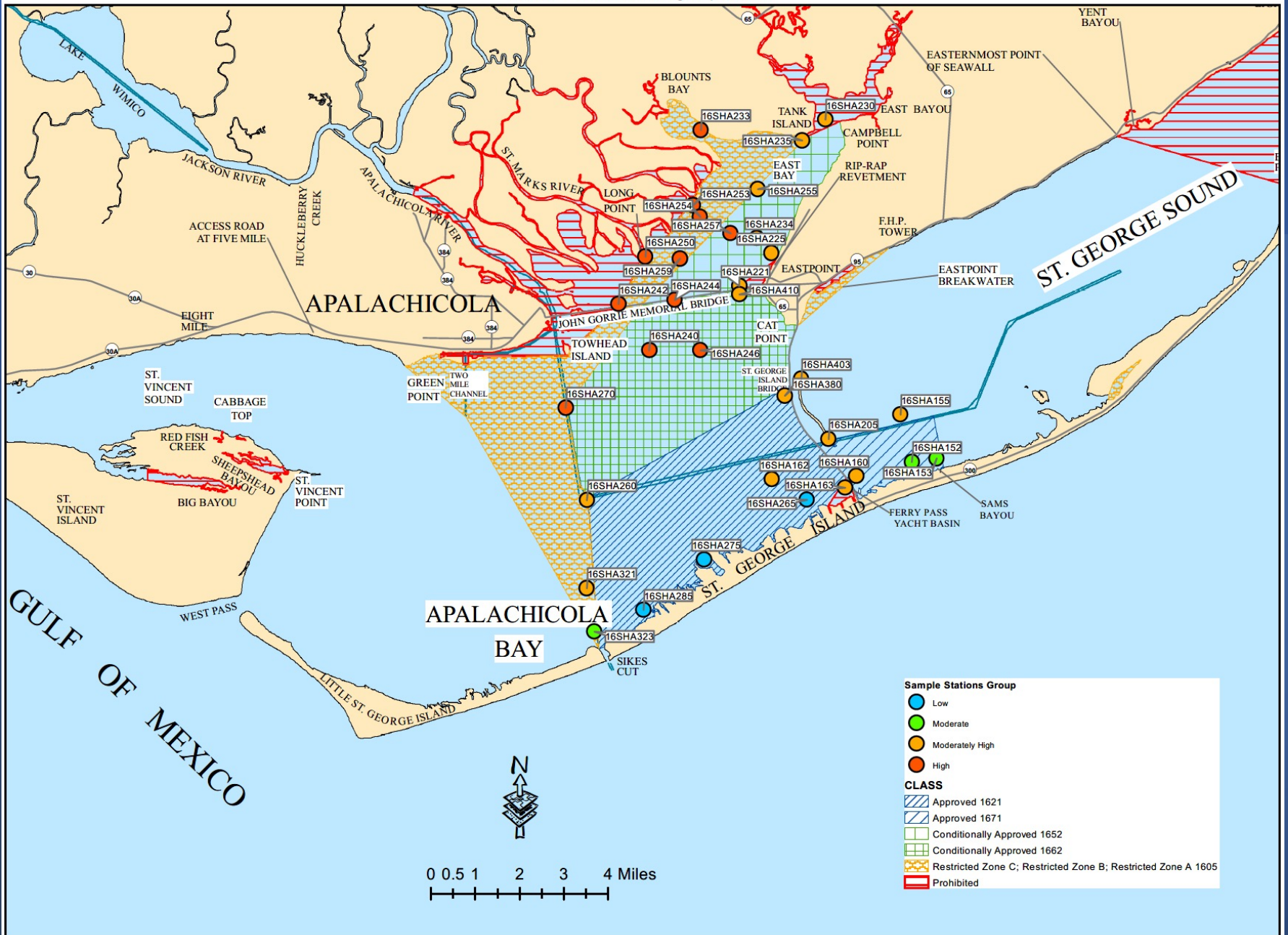
End result

When harvest areas are in the open status, water quality is suitable for the harvest of shellfish

Shellfish at the store or in a restaurant have been harvested from an open area



SHELLFISH HARVESTING AREA CLASSIFICATION WITH WATER SAMPLING STATIONS MAP #16B
 Apalachicola Bay System (#16) Shellfish Harvesting Area in Franklin County
 Winter - October through April data





Questions?



Year-round data from July 30, 2012 to June 30, 2021

	A	B	C	D	E	F	G	H	I
1	Month	1652	N	1662	N	1621	N	1671	N
2	January	X	0	X	9	X	25	X	56
3	February	X	17	X	40	X	47	X	72
4	March	X	59	X	56	X	53	X	83
5	April	X	29	X	34	Y	41	Y	51
6	May	Y	87	Y	97	Y	144	Y	58
7	June	Y	270	Y	188	Y	207	Y	78
8	July	Y	207	Y	175	Y	224	Y	115
9	August	Y	202	Y	118	Y	121	Y	94
10	September	Y	76	Y	81	Y	62	Y	44
11	October	X	32	Y	35	Y	29	Y	56
12	November	X	34	X	30	X	26	X	36
13	December	X	29	X	21	X	23	X	11



SHELLFISH HARVESTING AREA CLASSIFICATION WITH WATER SAMPLING STATIONS MAP #16B
 Apalachicola Bay System (#16) Shellfish Harvesting Area in Franklin County
 Year-round data (July 1, 2012 to June 30, 2021)

