



Production and Market Risks: A GIS Mapping Exercise / Tool

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<https://shellfish.ifas.ufl.edu/risk-workshop>

Examples of Risks



Production / Environmental:

- Low salinity – Less than 10 ppt for 2 consecutive months or more during summer months (May-Oct)
- High salinity – Greater than 35 ppt for 2 consecutive months or more during summer months (May-Oct)
- Hurricanes / Tropical storms

Market / Economic:

- Annual harvesting area closures
 - Management plan (i.e, rainfall, river stage)
 - Hurricanes / tropical storms
 - Harmful algal blooms

Risk Assessment for Florida Counties

County	Aquaculture Lease Area	Shellfish	Shellfish Harvest Area	Water Quality Stations
Escambia	Individual	Oysters	222	701 704
Franklin	Alligator Harbor	Clams	1801	005 030 035
Franklin	Alligator Harbor	Oysters	1801	005 030 035
Franklin	Rattlesnake Cove	Oysters	1601	080 081
Franklin	4 mile	Oysters	1612	340 341
Franklin	9 mile	Oysters	1611	346 351
Gulf	Individual	Oysters	1542	080 090
Indian River	Indian River, Individual	Oysters	7202	018 023
Indian River	Indian River, Individual	Clams	7202	018 023
Levy	Gulf Jackson, Pelican Reef	Clams	3001	080 081 461
Levy	Gulf Jackson, Pelican Reef	Oysters	3001	081 081 461
Levy	Dog Island, Corrigans	Clams	3012	170 190 611 711
Levy	Dog Island, Corrigans	Oysters	3012	171 190 611 711
Manatee	Individual	Clams	4802	120 140 370
Manatee	Individual	Oysters	4802	121 140 370
Santa Rosa	Individual	Oysters	232	720 722
Volusia	Individual	Oysters	8212	043 045
Wakulla	Oyster Bay, Skipper Bay	Oysters	2222	071 080 130 131

Evaluate risks for past 20 years (2004-2023)



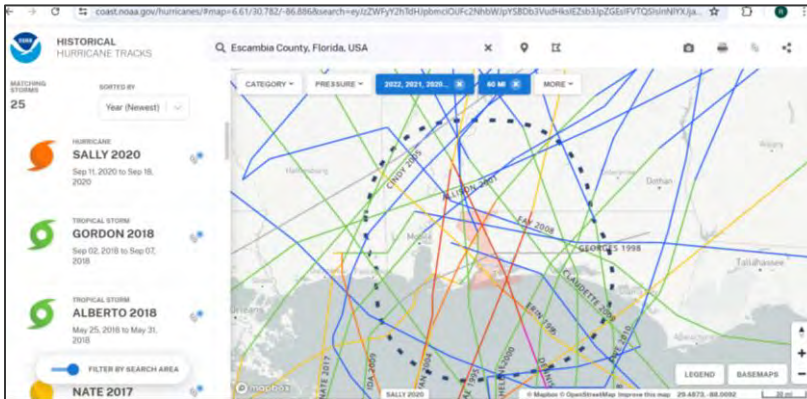
Historical Database Sources

- FL Department of Agriculture & Consumer Services, Division of Aquaculture
 - Shellfish Harvesting Area (SHA) water quality data by sampling station
 - <https://www.fdacs.gov/Agriculture-Industry/Aquaculture/Shellfish-Harvesting-Area-Classification/Shellfish-Harvesting-Area-Information>
 - Closure days for SHAs by request



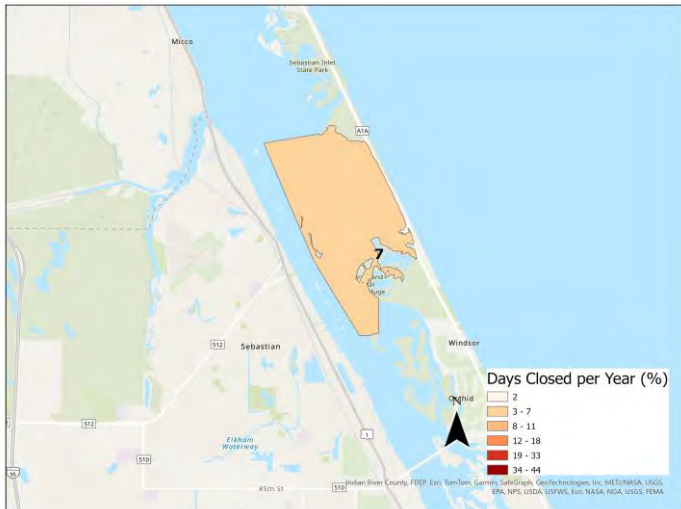
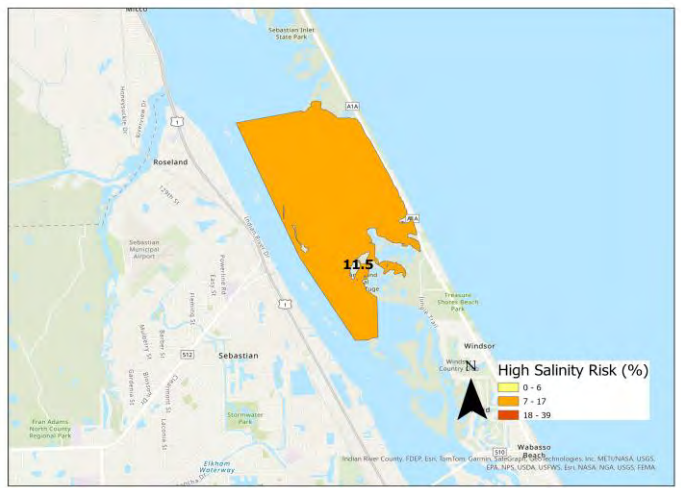
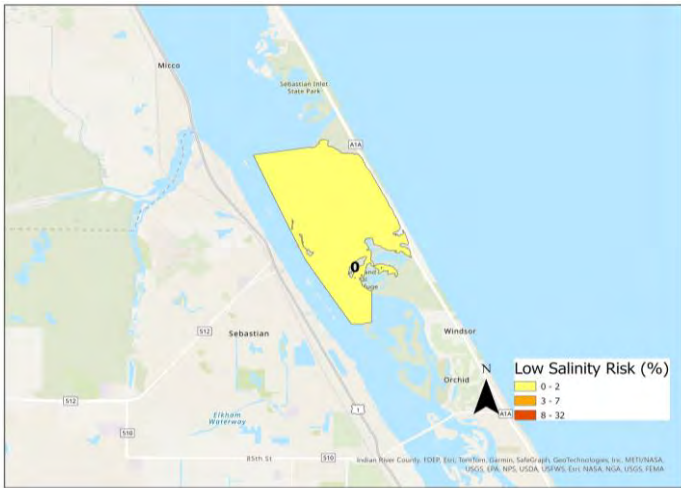
Historical Database Sources

- NOAA National Hurricane Center
 - Historical hurricane tracks since 1900s by county
 - <https://coast.noaa.gov/hurricanes/>



- Federal Emergency Management Agency
 - Administers federal disaster declarations
 - <https://www.fema.gov/openfema-data-page/disaster-declarations-summaries-v2>





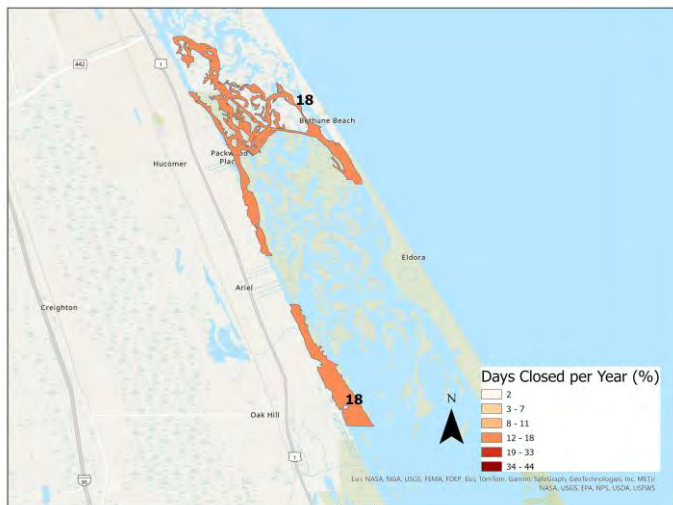
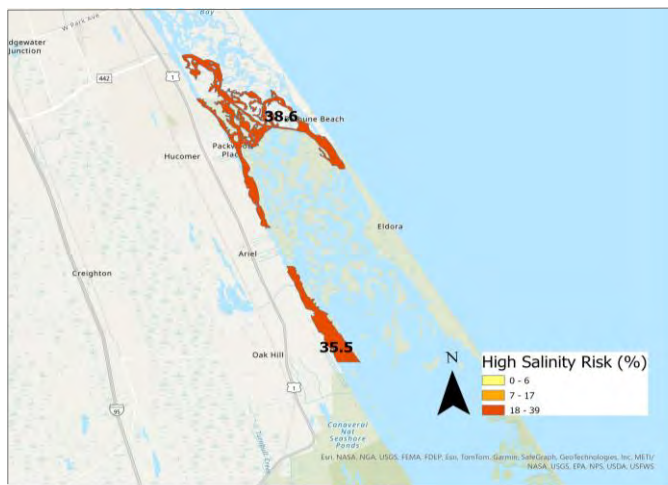
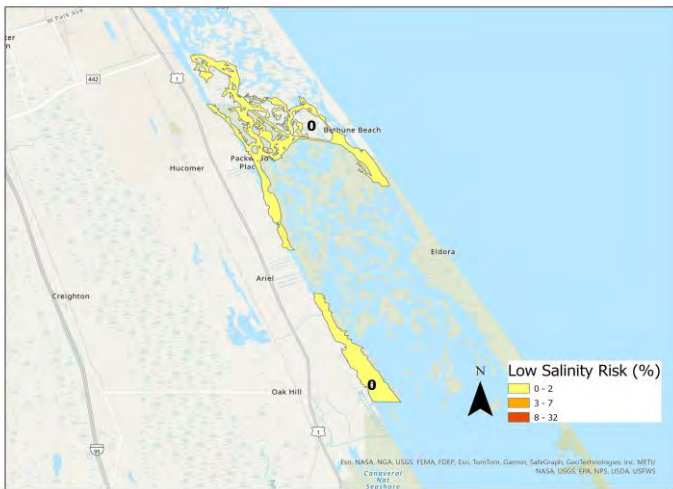
Probability (%) of Risks:

Low Salinity, <10 ppt two months or more during May-Oct
 High Salinity, >35 ppt two months or more during May-Oct
 SHA Harvest Closures, management plans, HABs, etc.

Based on averages of 20 years of data, 2004-2023
 from Florida Department of Agriculture and Consumer
 Services, Division of Aquaculture

Indian River County Shellfish Aquaculture Leases and AUZ

Risk Assessment and Management Workshops
 for Shellfish Growers, June 2024

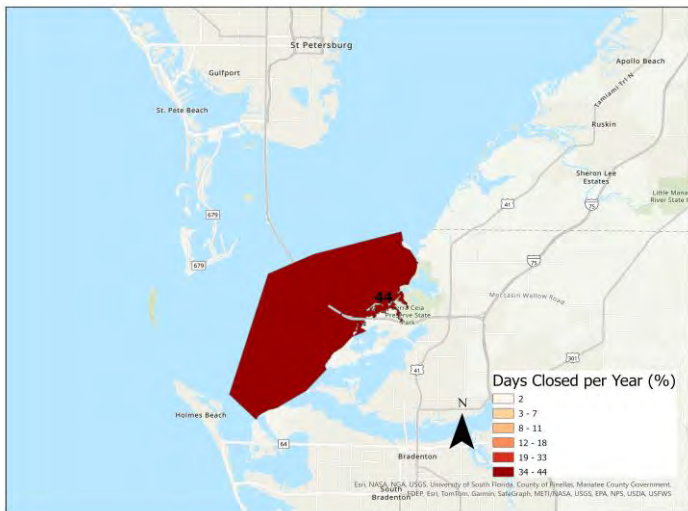
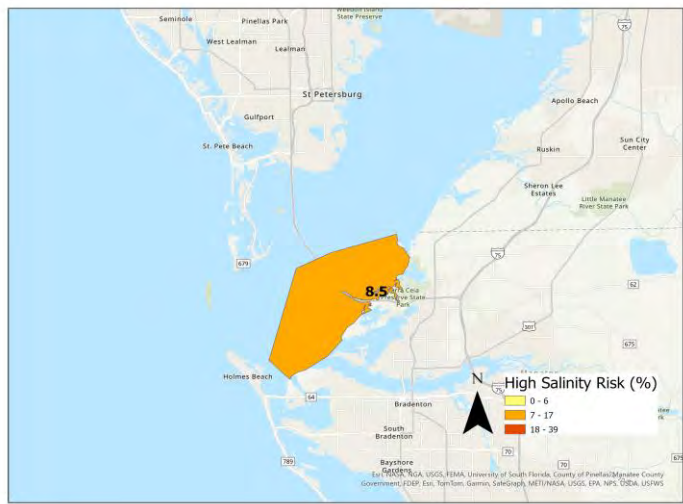
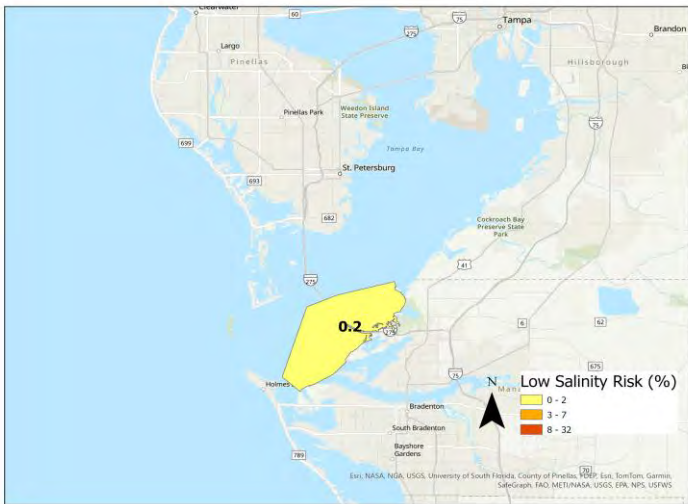


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Volusia County Shellfish Aquaculture Leases

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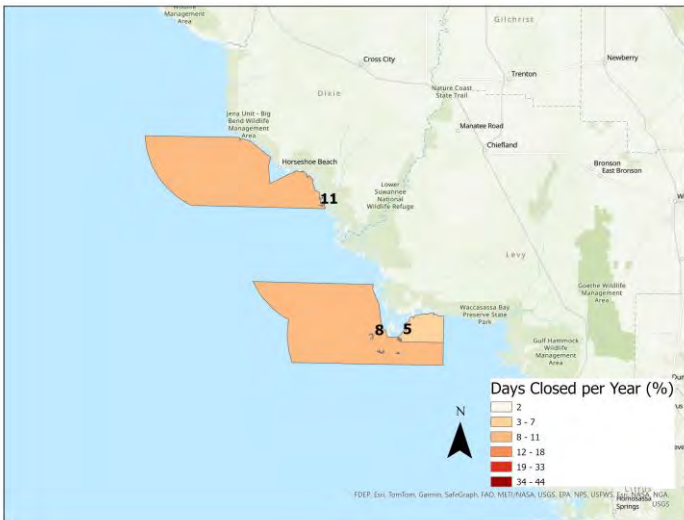
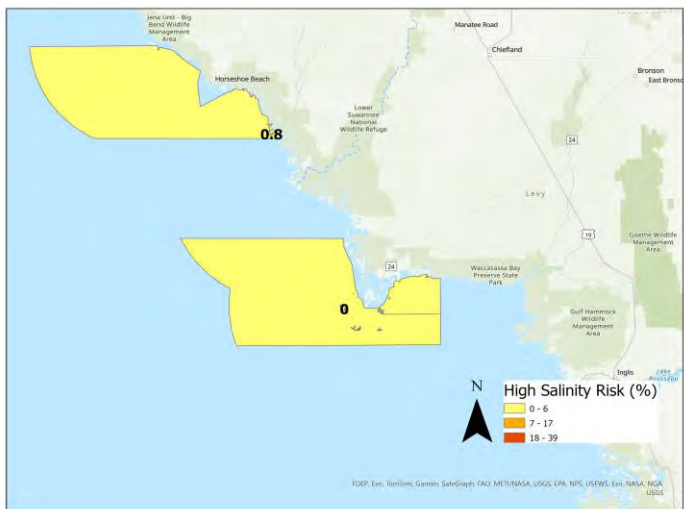
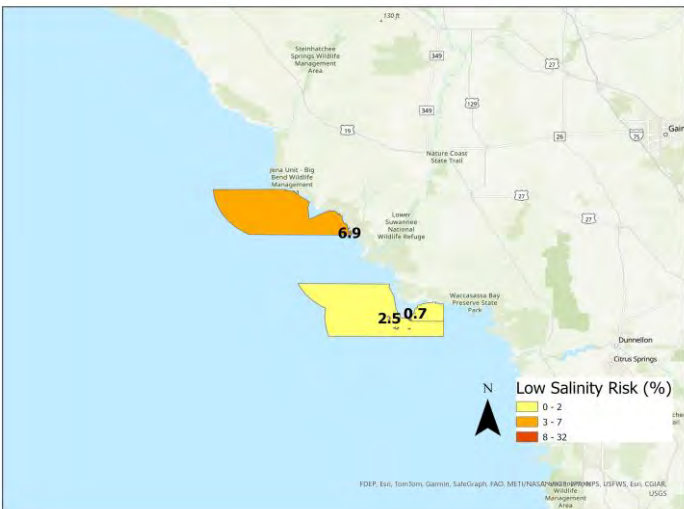


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Manatee County Shellfish Aquaculture Leases

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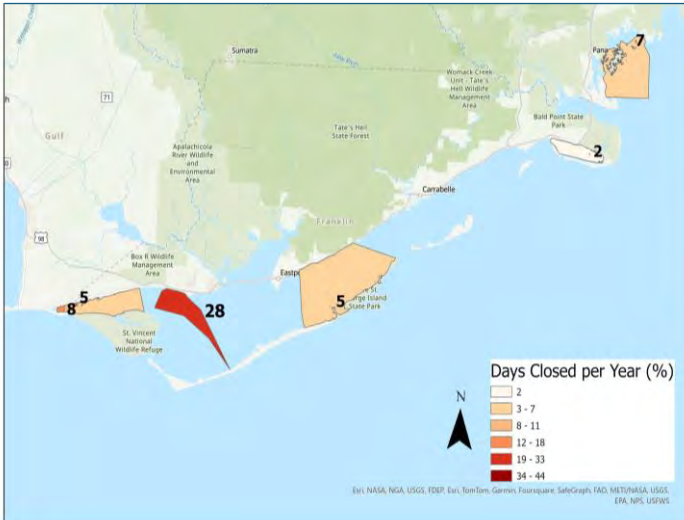
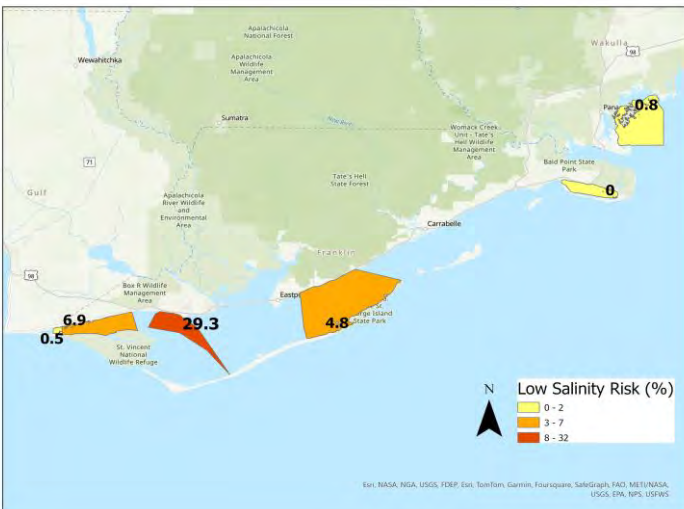


Probability (%) of Risks:
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 High Salinity, >35 ppt two months or more during May-Oct
 SHA Harvest Closures, management plans, HABs, etc.

Based on averages of 20 years of data, 2004-2023
 from Florida Department of Agriculture and Consumer
 Services, Division of Aquaculture

Dixie and Levy Counties Shellfish Aquaculture Use Zones

Risk Assessment and Management Workshops
 for Shellfish Growers, June 2024



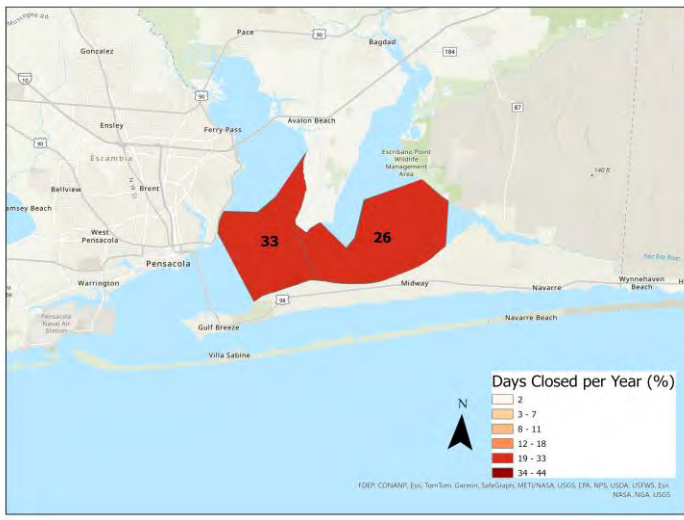
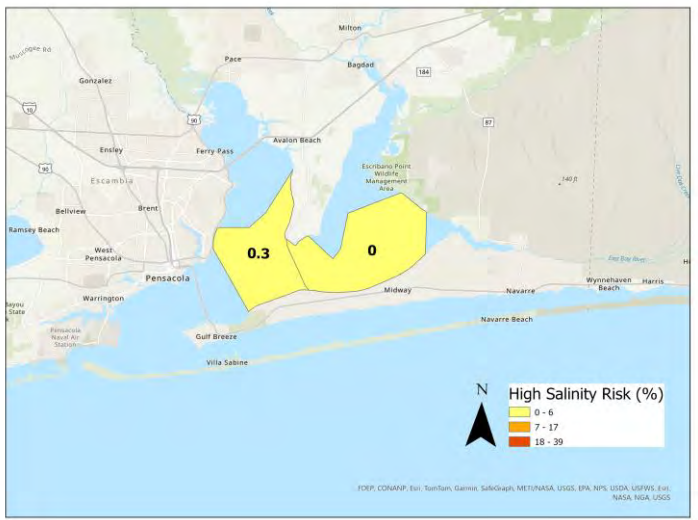
Probability (%) of Risks:

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Gulf, Franklin, and Wakulla Counties Shellfish Aquaculture Leases and AUZs

Risk Assessment and Management Workshops
 for Shellfish Growers, June 2024



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 Low Salinity, <10 ppt two months or more during May-Oct
 High Salinity, >35 ppt two months or more during May-Oct
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Based on averages of 20 years of data, 2004-2023
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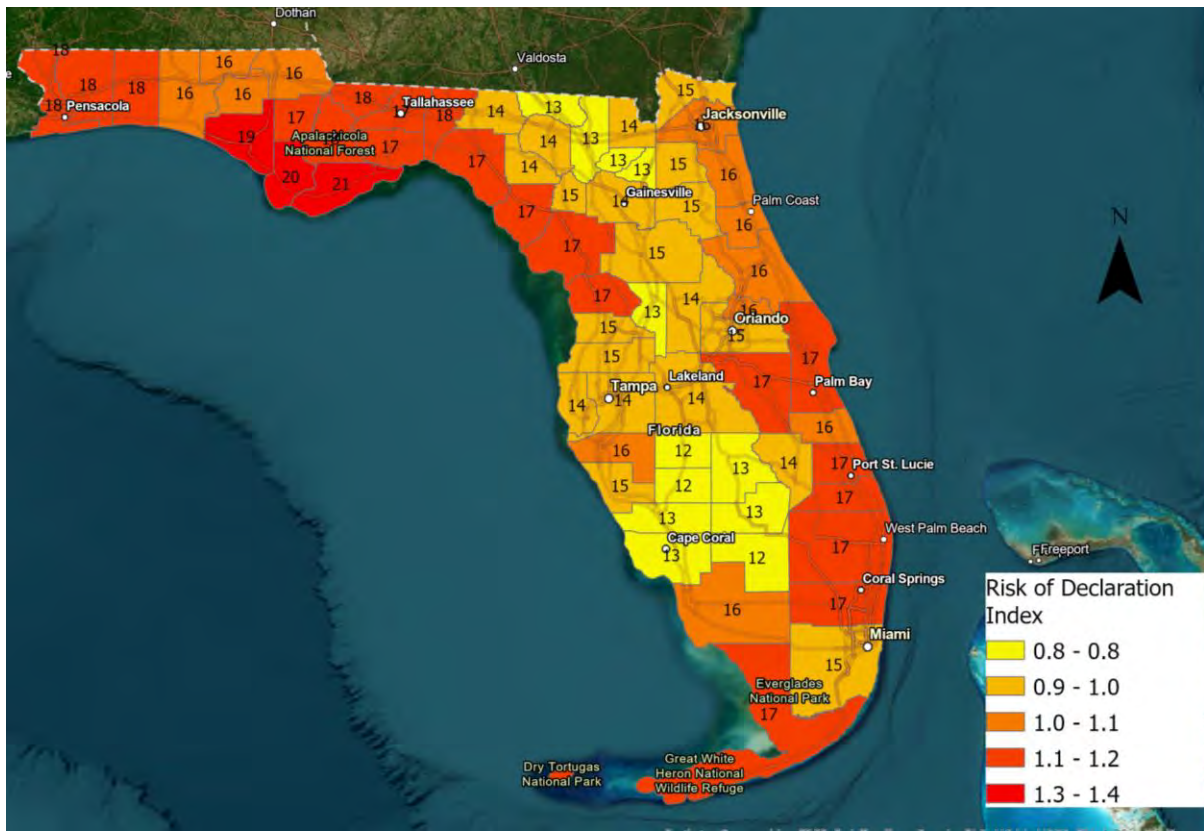
Escambia and Santa Rosa Counties Shellfish Aquaculture Leases

Risk Assessment and Management Workshops
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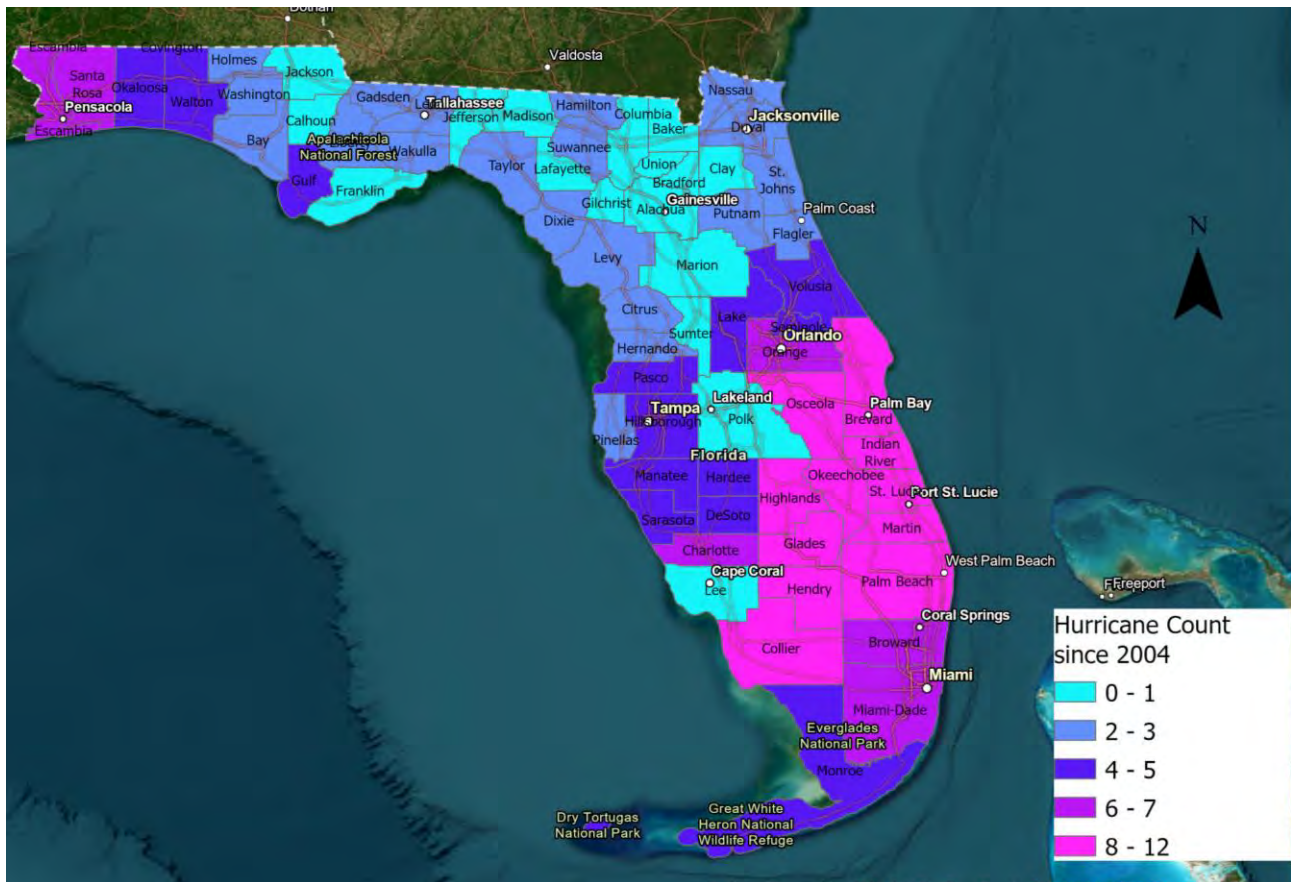
Hurricane Risk Assessment for Florida Counties

Number of federal declarations by county during 2004-2023

Risk index based on comparing county data with state average of 15.3



Hurricane Risk Assessment for Florida Counties



Risk Assessment for Florida Counties

County	Aquaculture Lease Area	Shellfish Harvest Area	Water Quality Stations near Leases	Production Risks (%)		# Hurricanes	Market Risks (%)
				Low Salinity	High Salinity		Harvest Closures
Dixie	Horseshoe, Long Bar	2502	360 362 371	6.9	0.8	17	11
Escambia	Individual	222	701 704	32.0	0.3	18	33
Franklin	Alligator Harbor	1801	005 030 035	0.0	6.0	21	2
Franklin	Rattlesnake Cove	1601	080 081	4.8	3.8	21	5
Franklin	4 mile	1612	340 341	29.3	3.9	21	28
Franklin	9 mile	1611	346 351	6.9	5.6	21	5
Gulf	Individual	1542	080 090	0.5	16.7	20	8
Indian River	Indian River Individual	7202	018 023	0	11.5	16	7
Levy	Gulf Jackson Pelican Reef	3001	080 081 461	2.5	0	17	8
Levy	Dog Island, Corrigans	3012	171 190 611 711	0.7	0	17	5
Manatee	Individual	4802	120 140 370	0.2	8.5	16	44
Santa Rosa	Individual	232	720 722	29.7	0	18	26
Volusia	Individual	8212	043 045	0	35.5	16	18
Wakulla	Oyster & Skipper Bays	2222	071 080 130 131	0.8	0.0	17	7

Risks evaluated over past 20 years (2004-2023)