TPWD Coastal Fisheries Monitoring Programs

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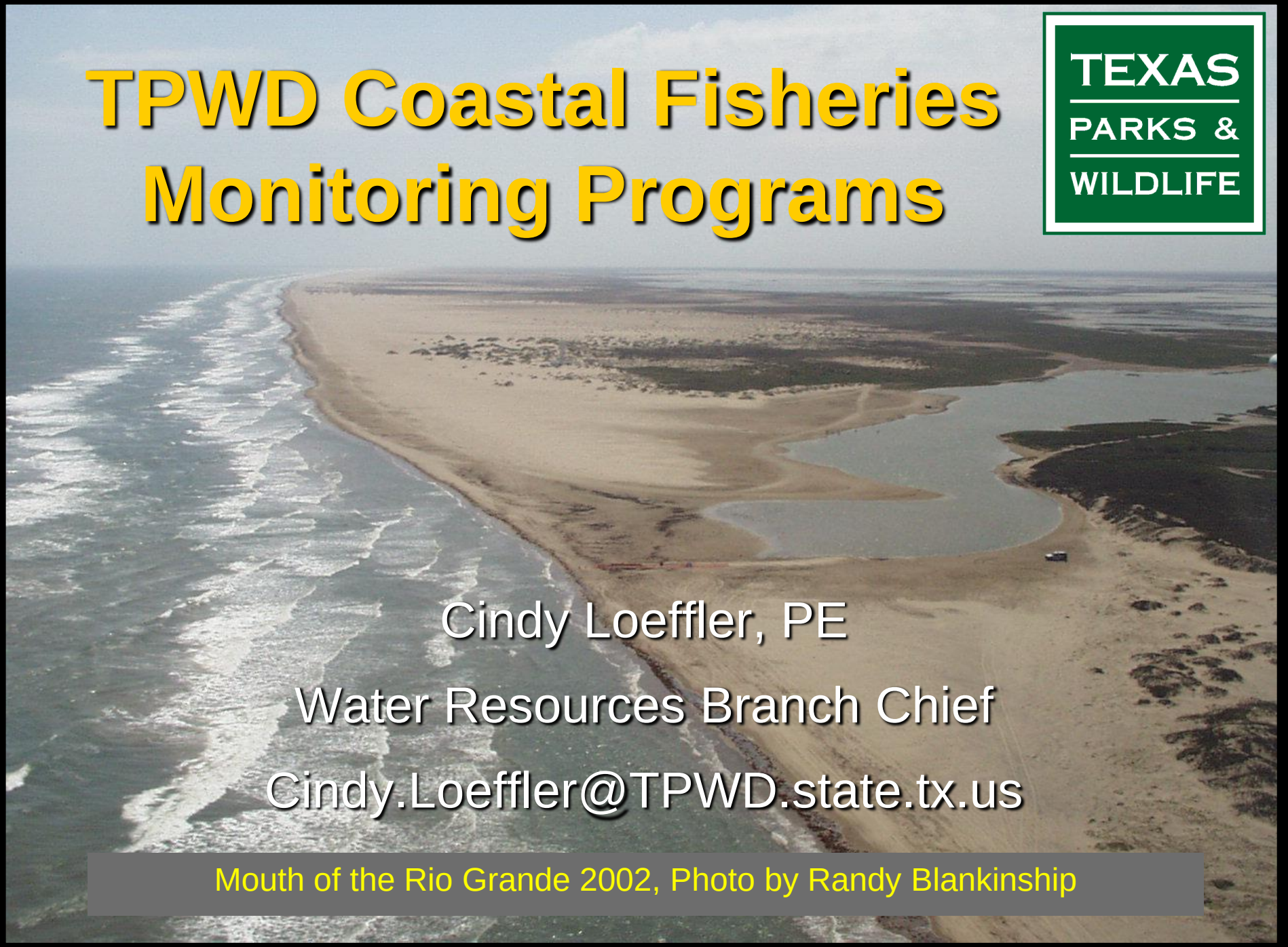
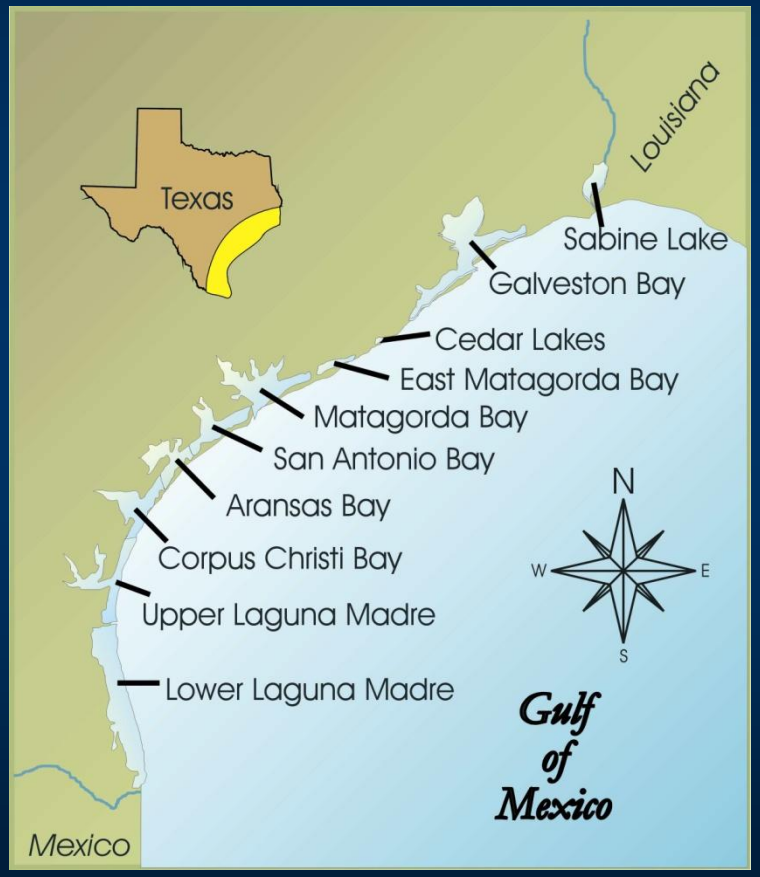


Mouth of the Rio Grande 2002, Photo by Randy Blankinship

Selected TPWD Coastal Fisheries Monitoring Programs

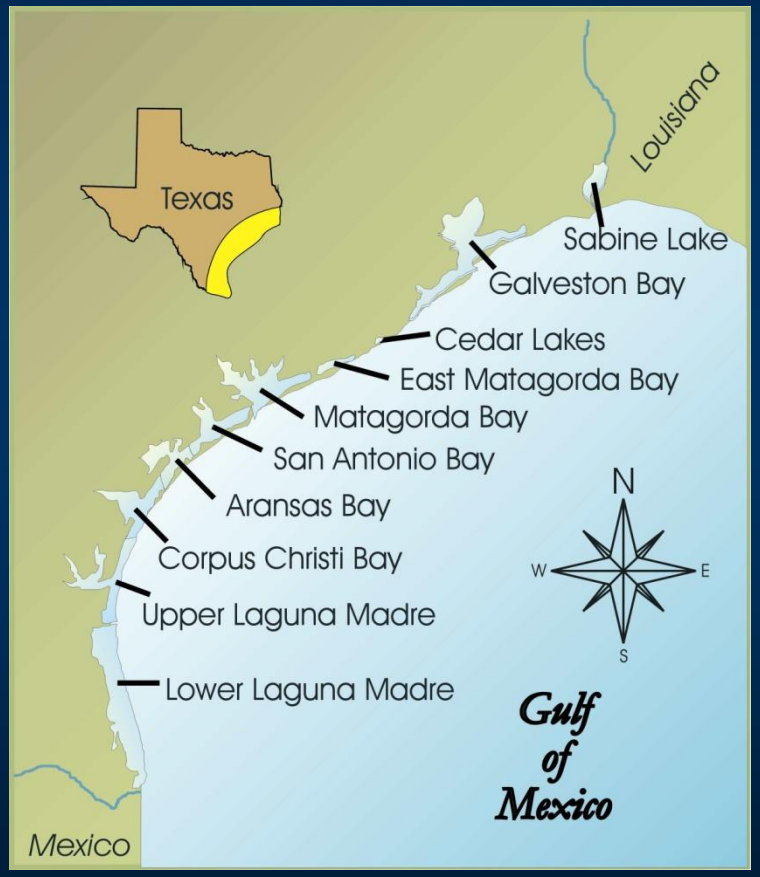
- Coastal Fisheries Resource Monitoring Program.
- Coastal Fisheries Dermo Monitoring Program.
- Kills and Spills/Pollution Response Inventory Species Mortality (PRISM).

TPWD Resource Monitoring Program Overview



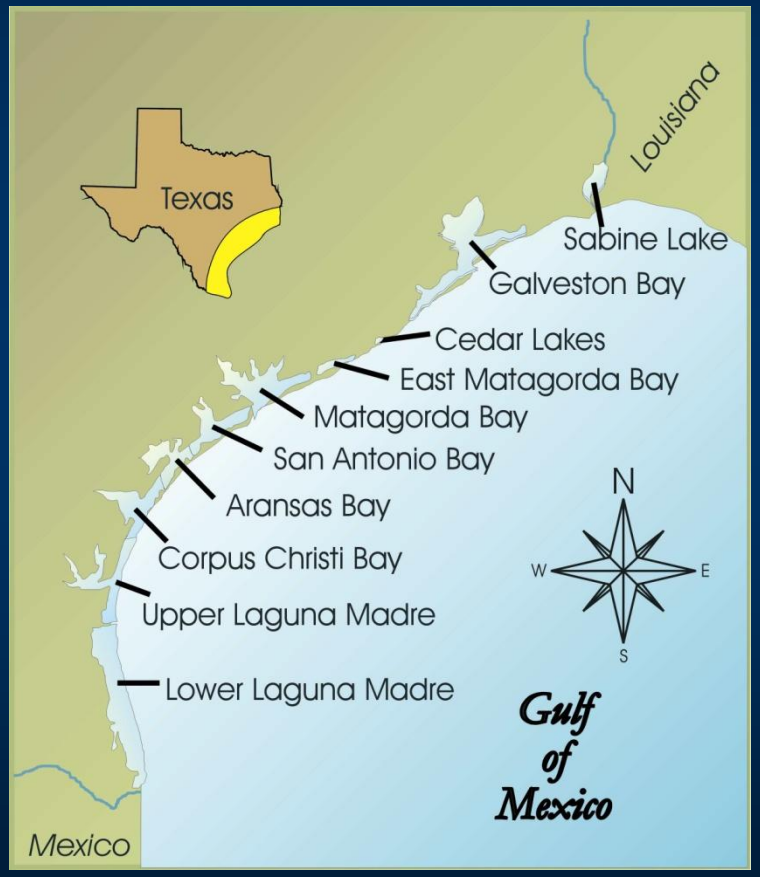
- Initiated in 1975.
- Stratified random sampling.
- Standardized methods.
- Gill nets (780/year).
- Bay trawls (1,680/year).
- Gulf trawls (960/year).
- Bag seines (2,160/year).
- Oyster dredges (1,200/year).
- Total—6,780/year.

TPWD Resource Monitoring Gears and Purpose



- Gill nets (shoreline, adult and subadult finfish, blue crabs).
- Bag seines (shoreline, juvenile finfish and invertebrates).
- Bay trawls (open bay, juvenile and subadult finfish and invertebrates).
- Gulf trawls (open Gulf, TTS, juvenile and subadult finfish and invertebrates).
- Oyster dredges (oyster reefs, oysters).

TPWD Resource Monitoring Program
Start Date and Sample Frequency

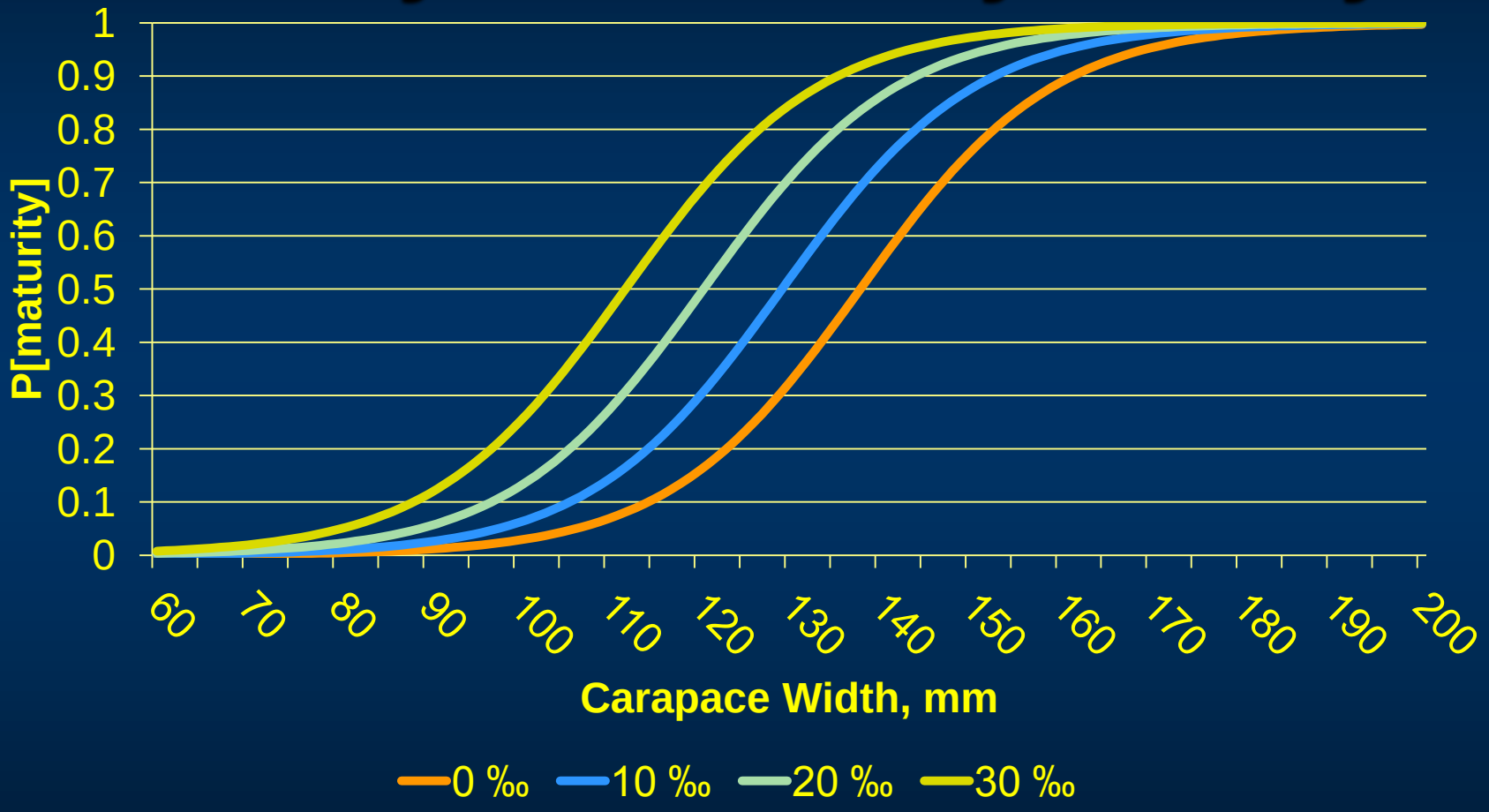


- 1975: Gill nets (Spring/Fall, 45 per season/bay).
- 1977: Bag seines (20/month/bay).
- 1982: Bay trawls (10-20/month/bay).
- 1985: Gulf trawls (16/month/Gulf area).
- 1986: Oyster dredges (20-30/month/bay).

TPWD Resource Monitoring Parameters

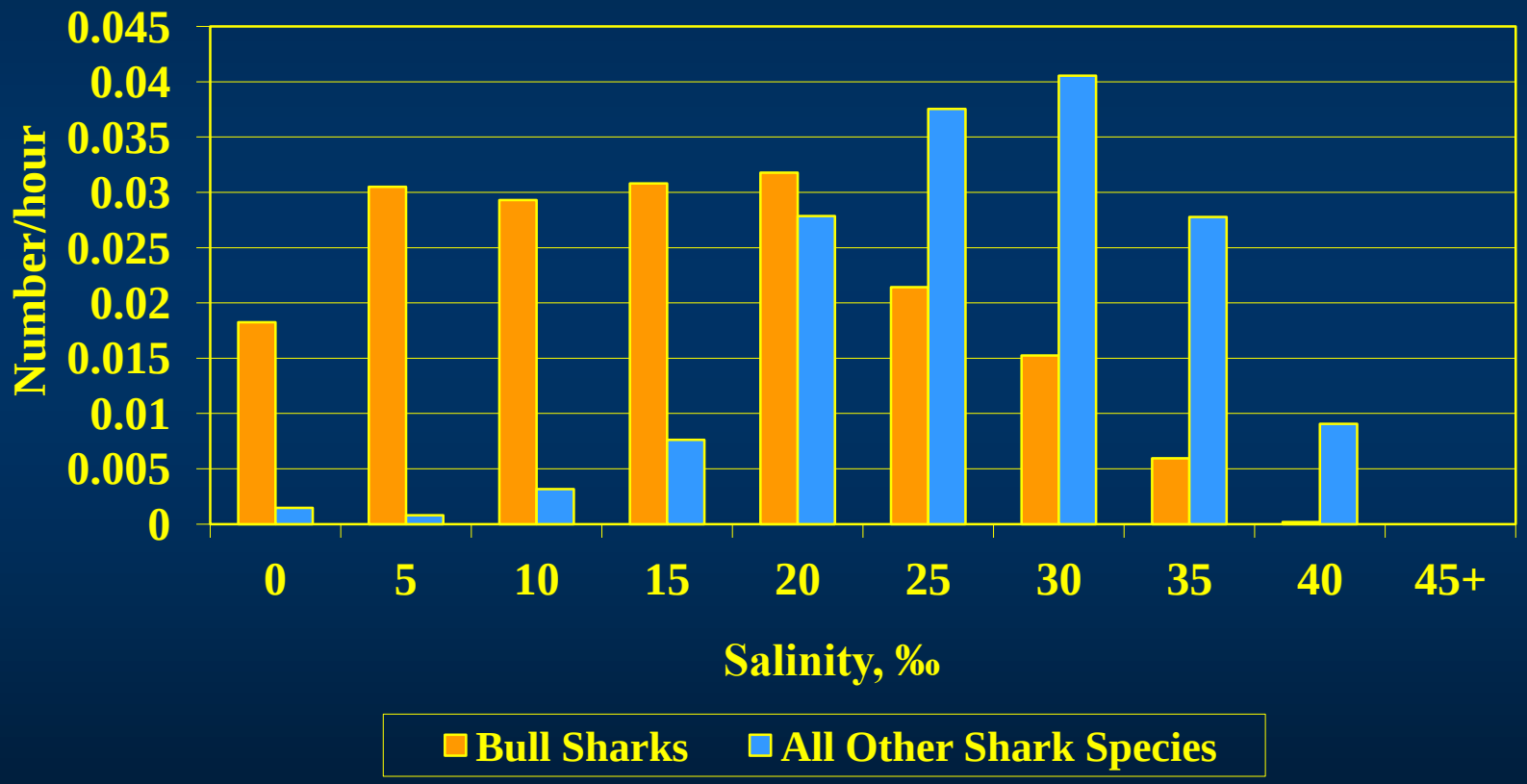
- All organisms identified to species and counted.
- Lengths of up to 19 individuals per species.
- Date, latitude-longitude of sample location.
- Water temperature (°C).
- Salinity (‰).
- Dissolved oxygen (ppm).
- Turbidity (NTU).
- Depth (m).

Female Blue Crab Maturity Schedule by Salinity



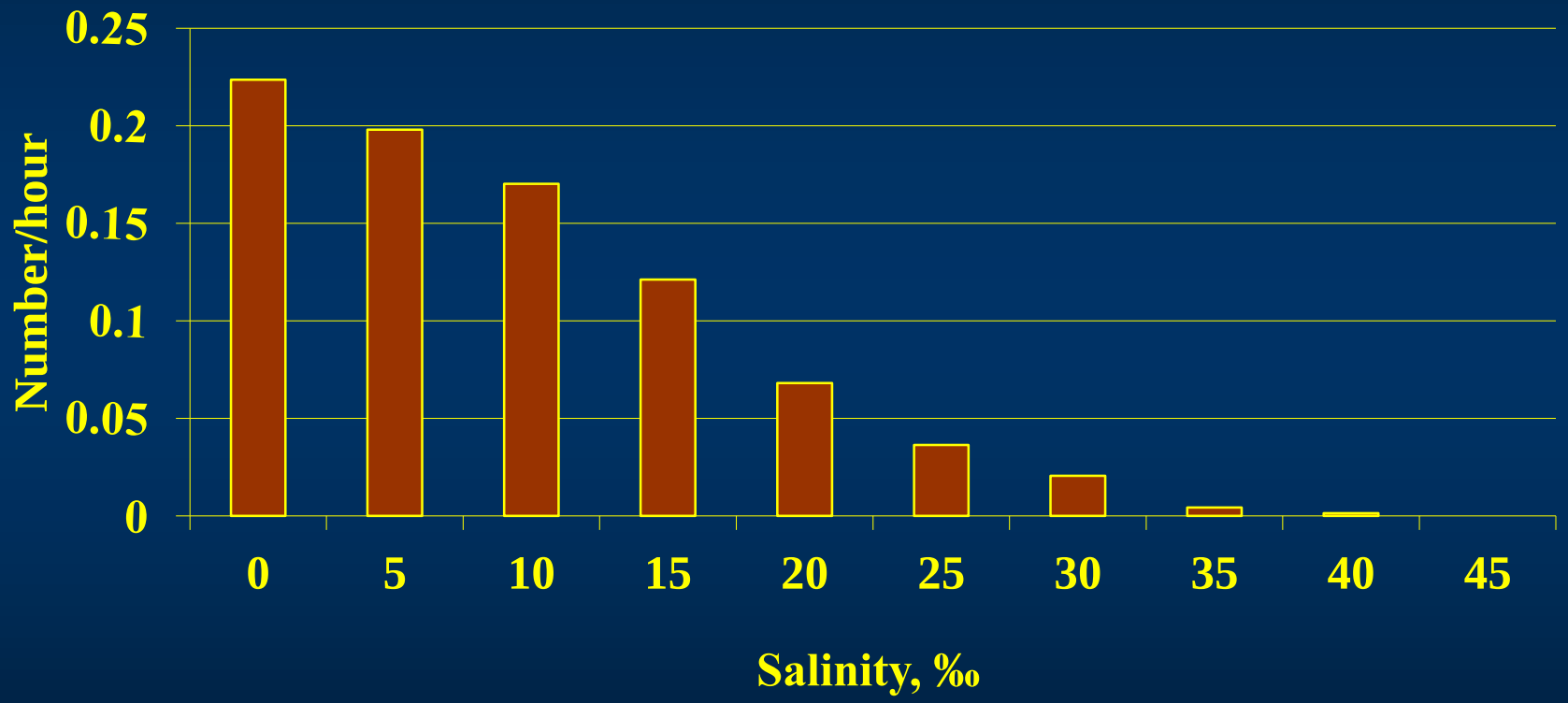
From Fisher (1999)

Shark CPUE by Salinity



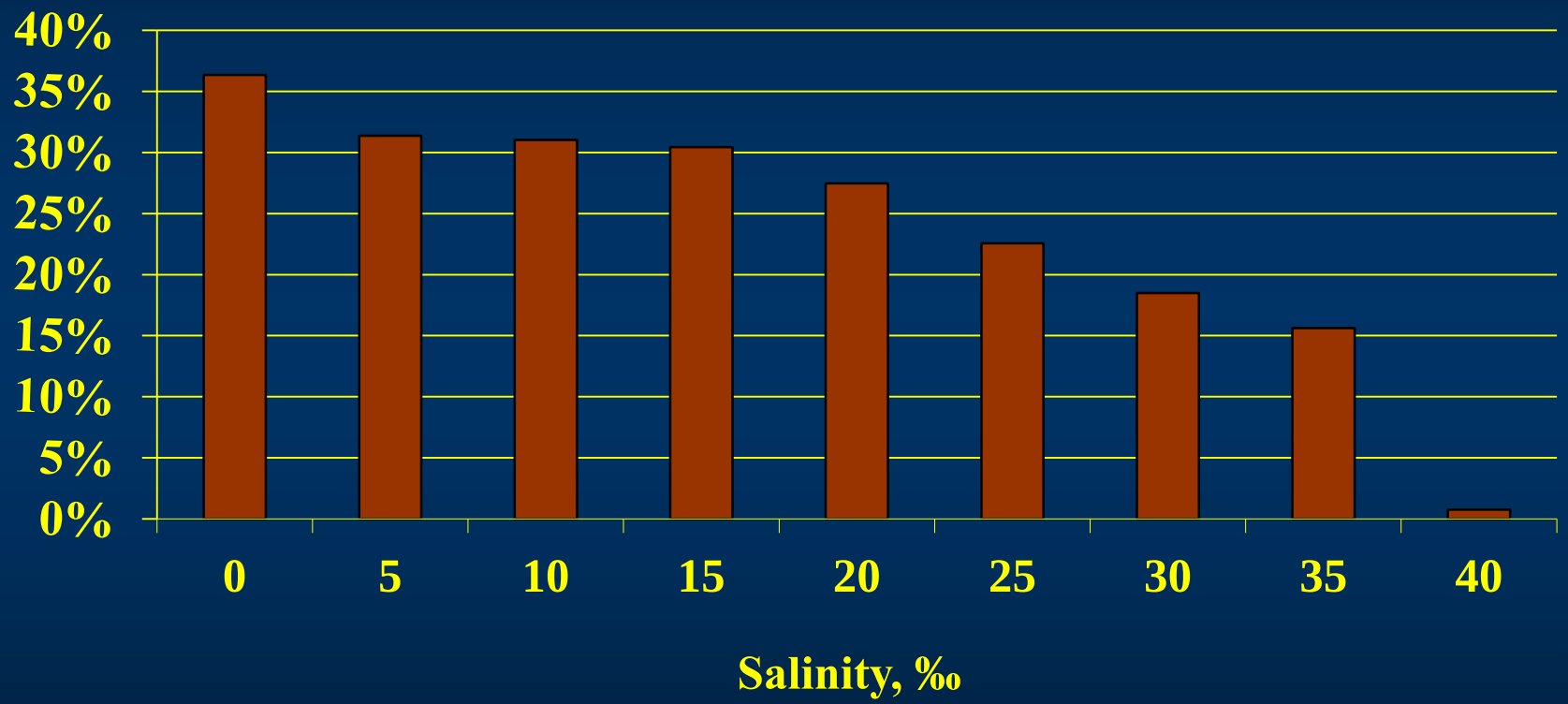
TPW coastwide gill net data, 1982-2011

Alligator Gar CPUE, by Salinity



TPW coastwide gill net data, 1982-2011

Percent of Live Oysters, by Salinity

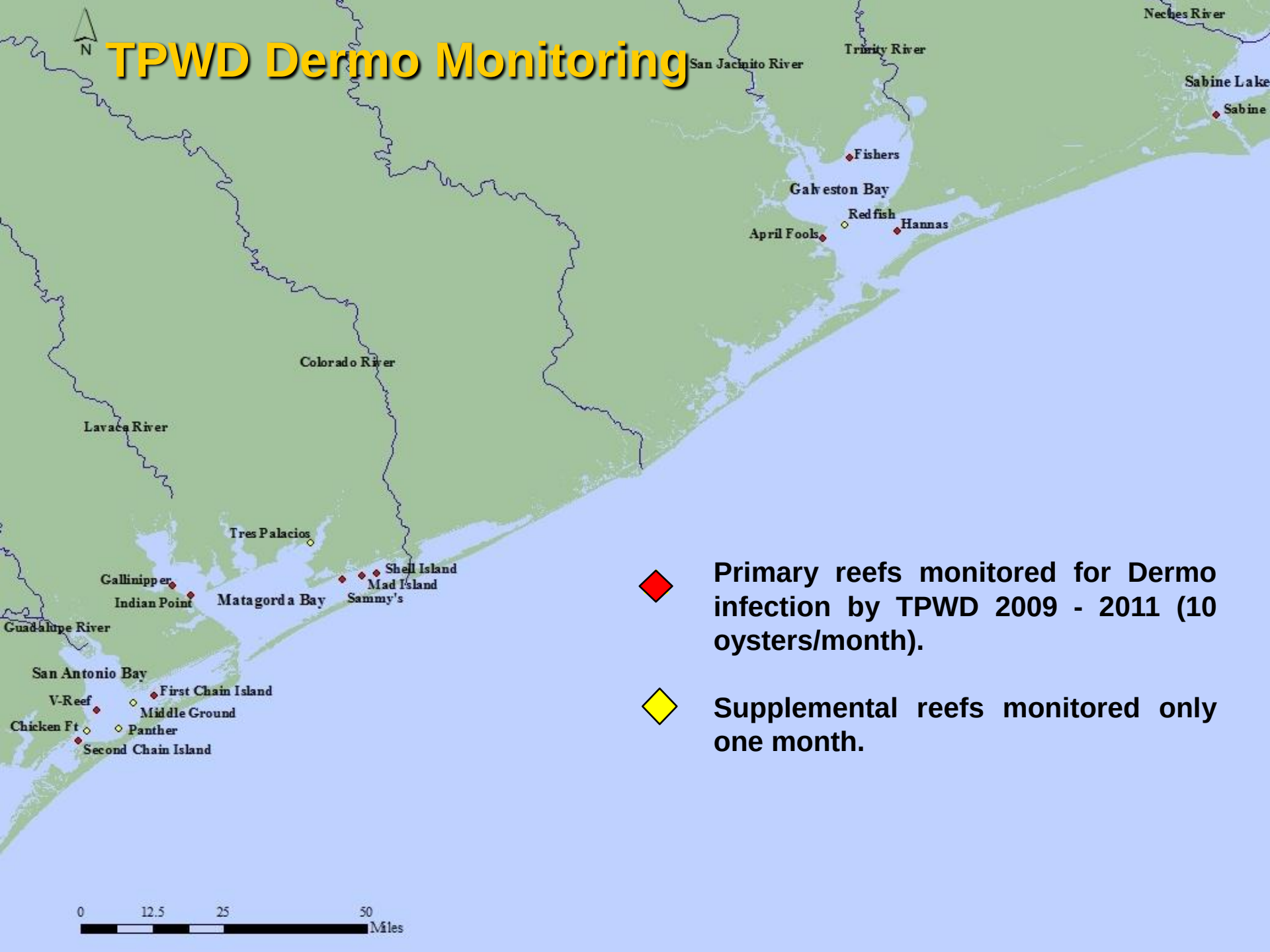


TPW Galveston Bay oyster dredge data, 1985-2012

TPWD Dermo Monitoring Program

- 1960-80's: TPWD began monitoring populations of the eastern oyster (*Crassostrea virginica*) to qualitatively determine infection by the parasite *Perkinsus marinus*, commonly known as Dermo, using Ray's Fluid Thioglycolate Method (RFTM).
- 1998 : TPWD and TAMUG Dermo monitoring program in Galveston Bay
  - 2002 - monitoring program was expanded to Matagorda Bay
  - 2005 - monitoring program was expanded to Lavaca and San Antonio Bays
  - 2009 - monitoring program was expanded to Sabine Lake
  - August 2011 – monitoring program ended due to budget constraints.
- 2009 - TPWD, with additional funds from TWDB's Research and Planning Funds, tested newer QPCR Method (quantitative polymerase-chain reaction) in parallel with traditional RFTM method.
- QPCR Method, standardized by RFTM, provides a viable alternative for monitoring Dermo infection in Texas Bays and maintains ability to use historical RFTM data.

TPWD Dermo Monitoring



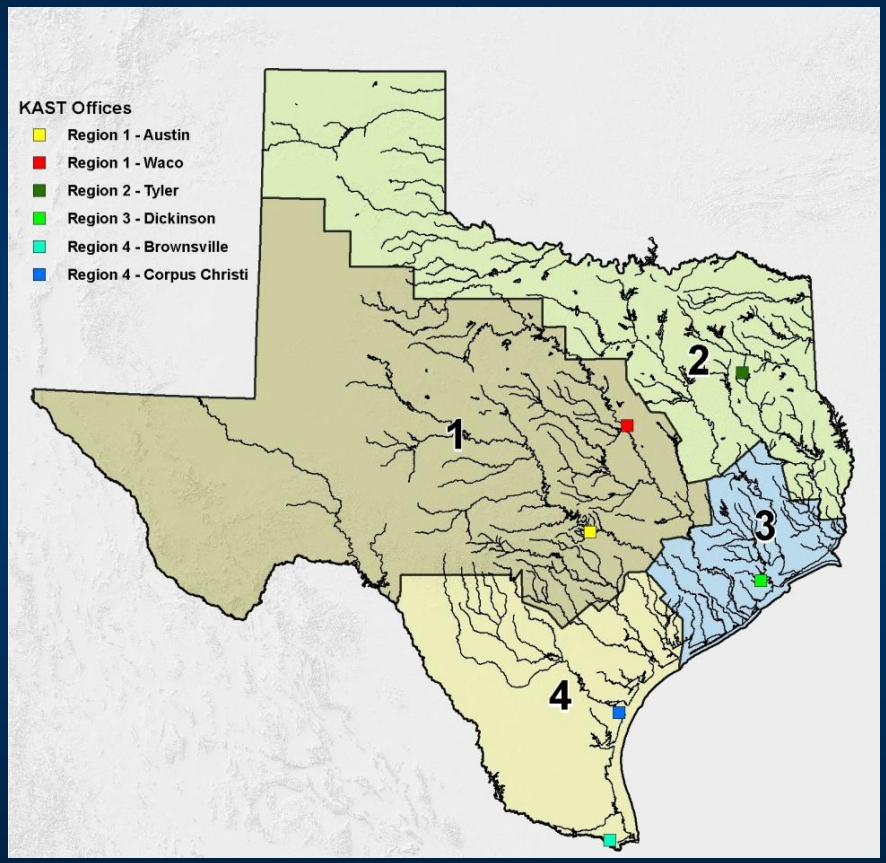
Primary reefs monitored for Dermo infection by TPWD 2009 - 2011 (10 oysters/month).

Supplemental reefs monitored only one month.

TPWD Kills and Spills Team (KAST)

Goals

- Determine the cause of fish and wildlife kills and pollution incidents.
- Minimize damage resulting from these events.
- Obtain compensation for environmental damage and restore affected habitat.
- Study relationships between water quality, habitat, and biota.



Fish Kill Events

Natural causes

- Low dissolved oxygen
- Toxic algal blooms
- Disease
- Weather

Human activities

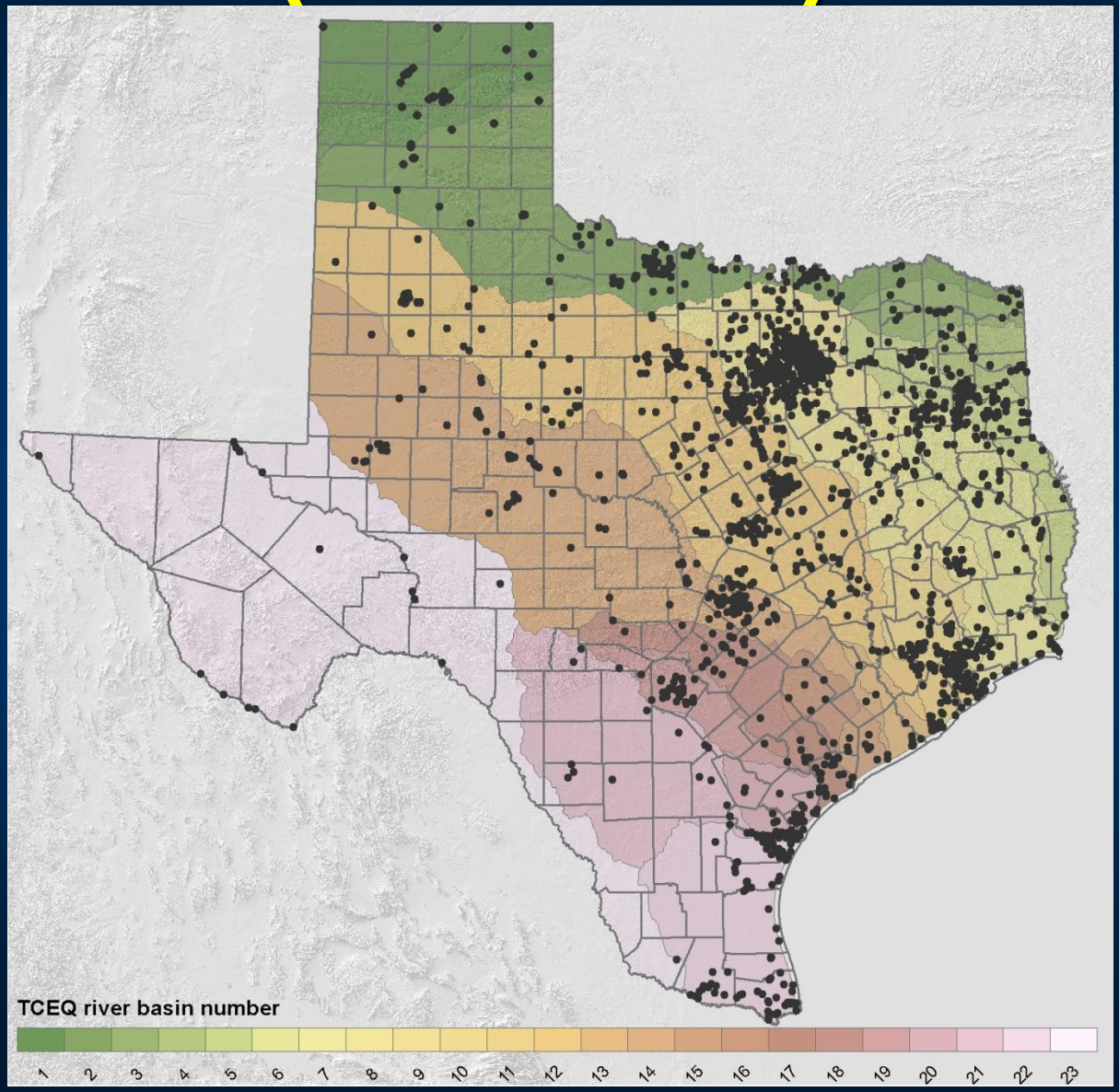
- Low dissolved oxygen
- Ammonia
- Oil and gas products
- Pesticides

Pollution Response Inventory Species Mortality (PRISM)

Investigations are reported in the PRISM database

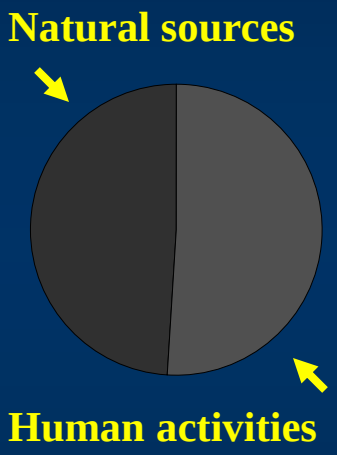
- Detailed investigation information.
- Can be queried by a number of parameters.
- Used for observing trends and the 305(b) assessment.
- Available for open records requests.

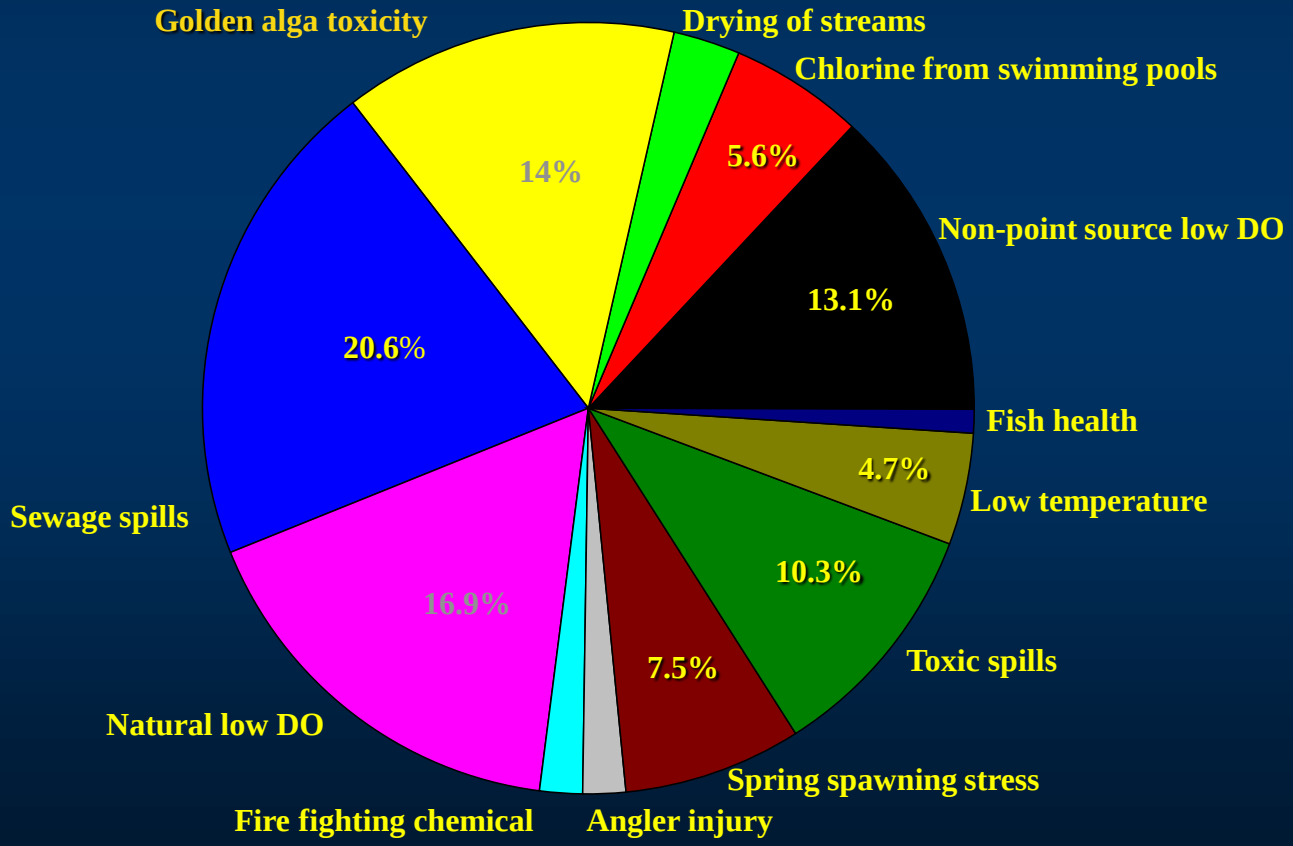
Distribution of KAST Investigations (2002 – 2012)



Fish Kill Investigations

Sources of fish kills in central and west Texas (2005 – 2009)





50% of kills were due to low DO

Thank you!

- TPWD Coastal Fisheries Management Division
- Mark Fisher, TPWD CF Science Director
- Adam Whisenant, TPWD Water Resources
- Jan Culbertson and Joel Anderson, TPWD CF Ecosystems Resources Program, and all the CF staff who assisted in collecting and processing PCR samples, and extractions of tissue from the oysters.
- TWDB Research and Planning Fund, Sport Fish and Wildlife Restoration Fund
- Dr. Sammy Ray, TAMUG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