



# Bio-Assessment of the Arroyo Colorado

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# Sampling

- Gillnetting
- Bag Seining
- Water Quality
- Fish Kills



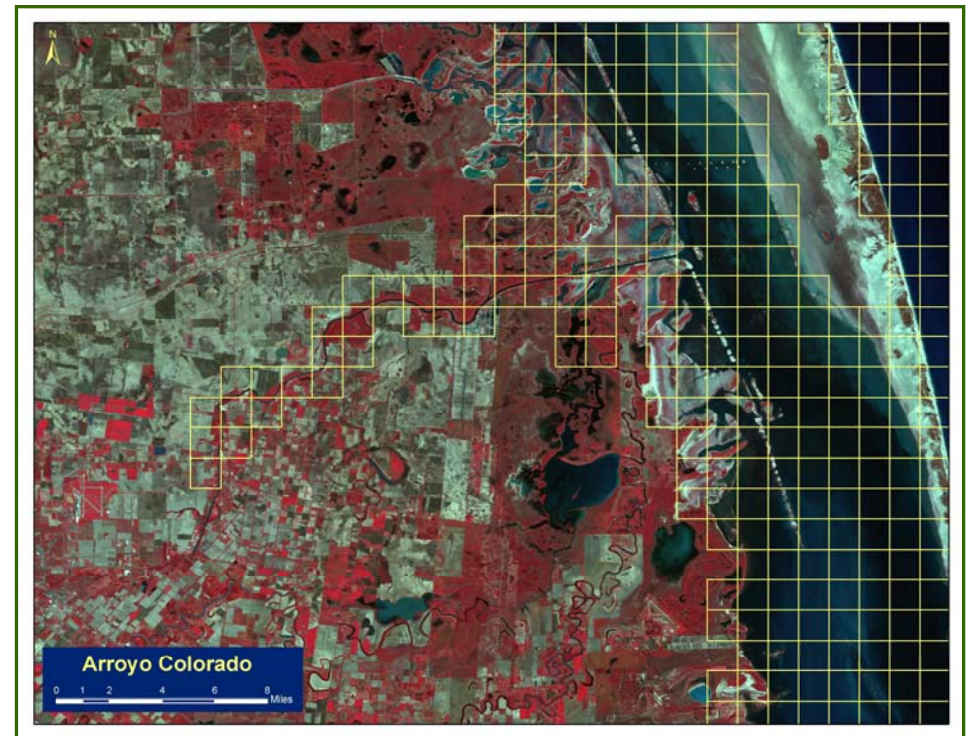
# Gillnetting

- 10 week periods twice per year
- 45 600' long gill nets per period
  - 3", 4", 5", and 6" meshes (150' long each)



# Gillnetting

- Random sampling stations in the LLM, South Bay, and the Old Arroyo
  - 1-2 sites per sampling period in Arroyo
- Same sampling protocol used by TPWD for entire Texas Coast since 1983



# Bag Seining

- 20 samples every month
  - Split between 1<sup>st</sup> and 2<sup>nd</sup> half of month
- Up to 5 per day
- Random sampling stations in the LLM, South Bay, and the Arroyo Colorado below the Port of Harlingen
  - Up to 5 per month in or near the Arroyo



# Bag Seining

- Standardized length and stretch ropes
- Known area sampled
  - # fish /Hectare



# Water Quality

- Taken at each Sampling
  - Dissolved Oxygen
  - Salinity
  - Temperature
  - Turbidity



# Data Continuity

- For Temporal or Geographical Trends:
  - Maintain as many variables as possible constant
    - Same sample sites
    - Same sample equipment
    - Same specimen ID guides
    - Standardized data sheets
    - Same variables tested
    - Same sample units
- Continuity of data is Imperative

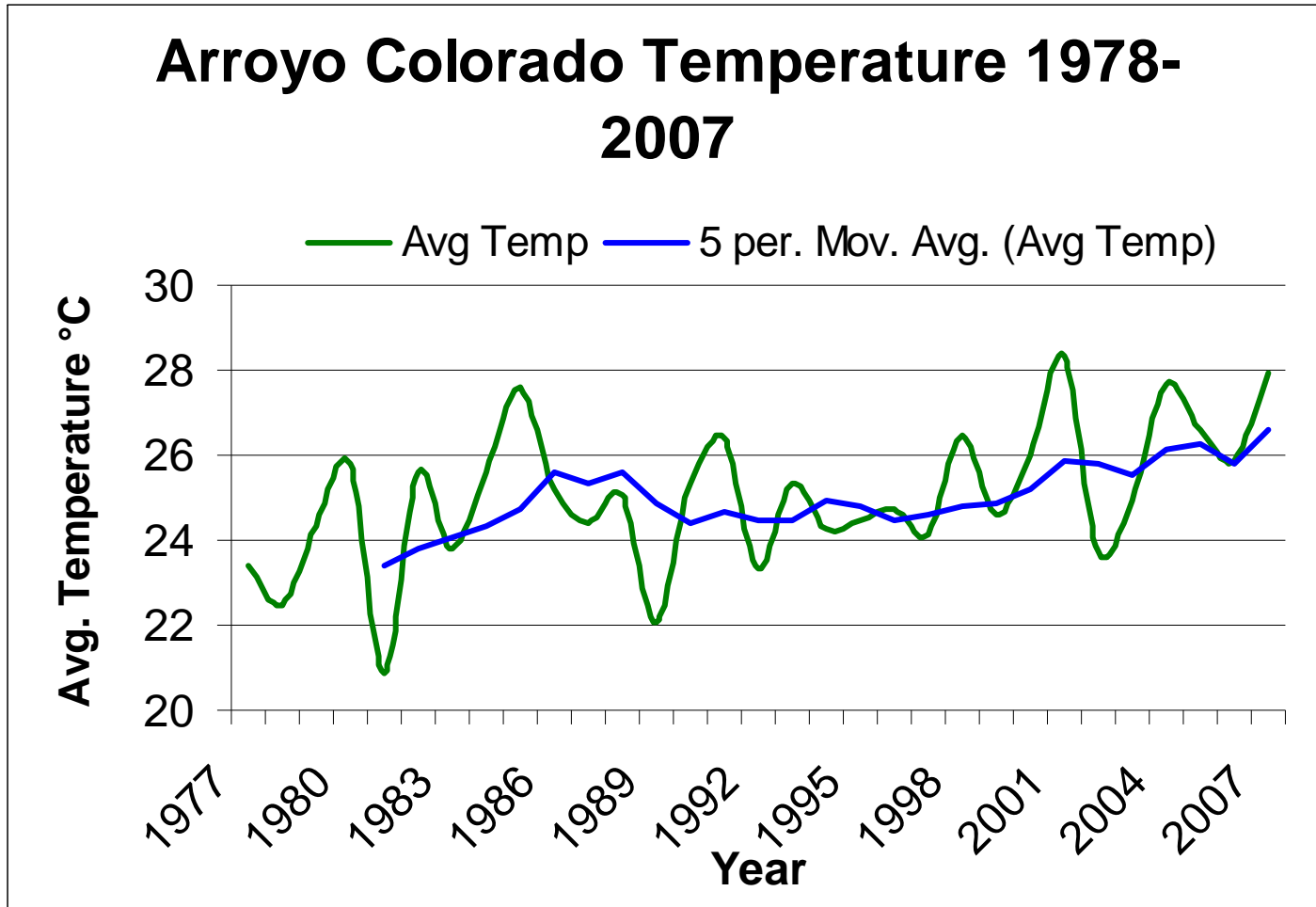


# TPWD Database

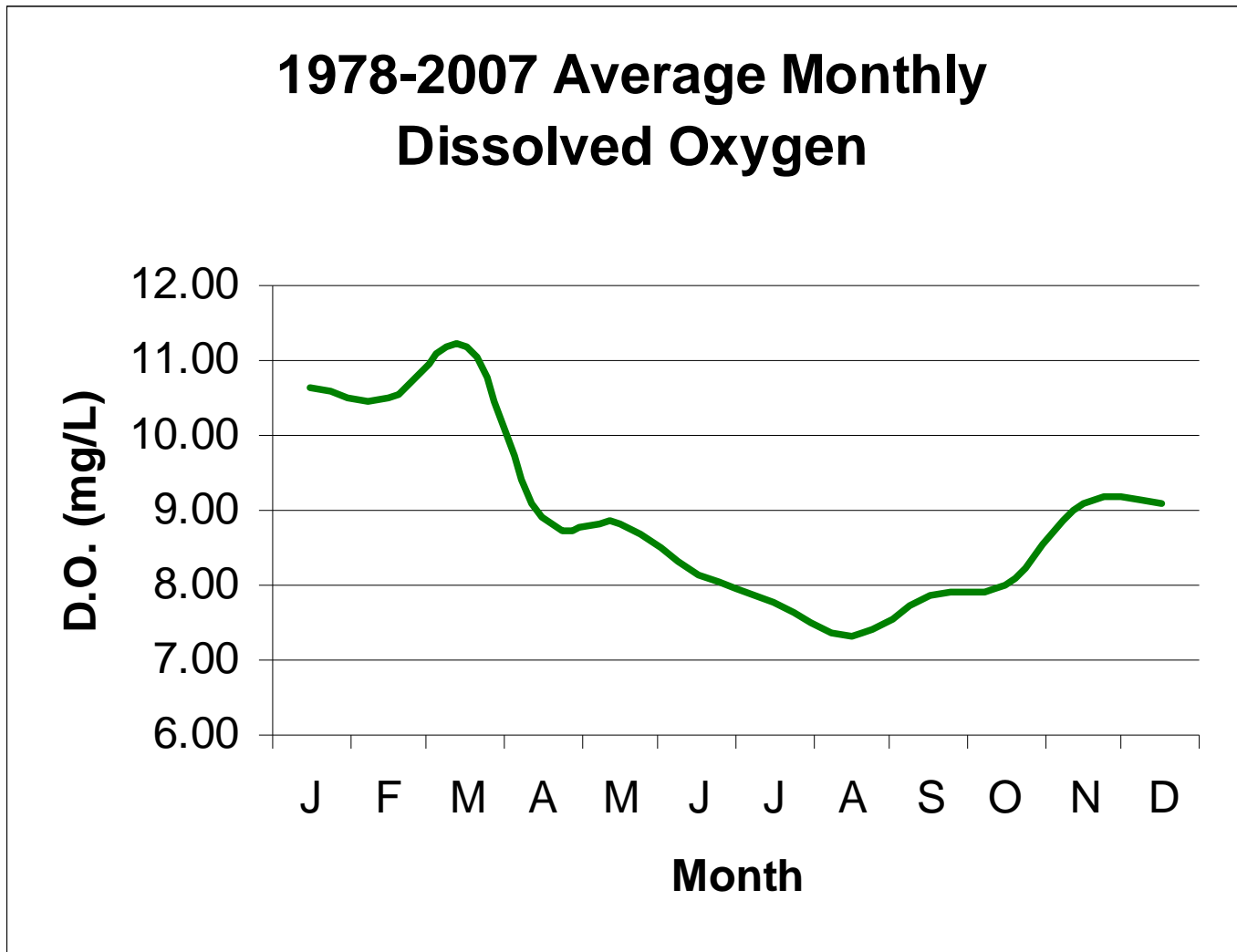
- Data collected by TPWD sampling is compiled into a large database
- Data from whole Texas coast is available for TPWD Research Scientists to access
  - Data is public domain, and Scientists and the public may request data
- Data back to 1975



# TPWD Data

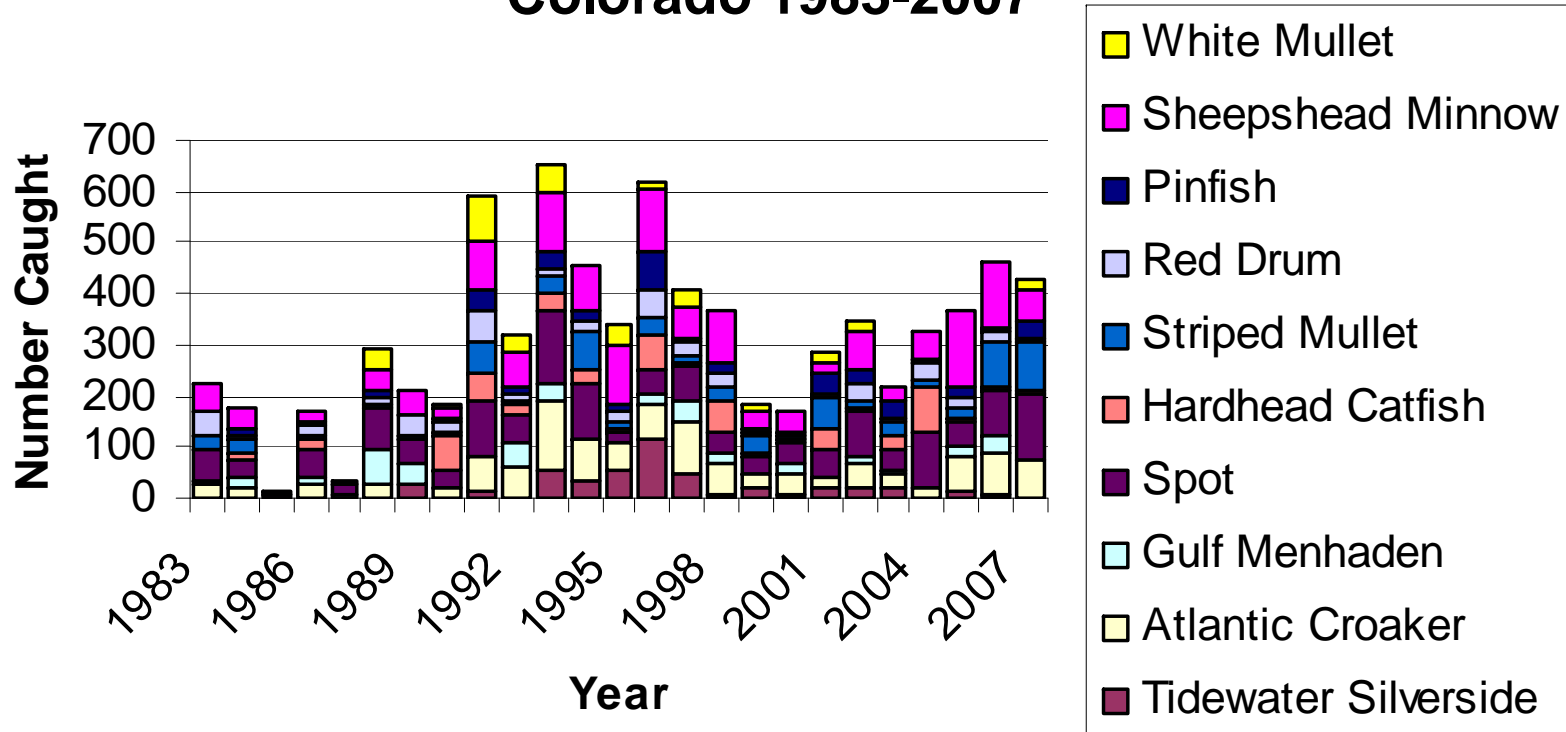


# TPWD Data

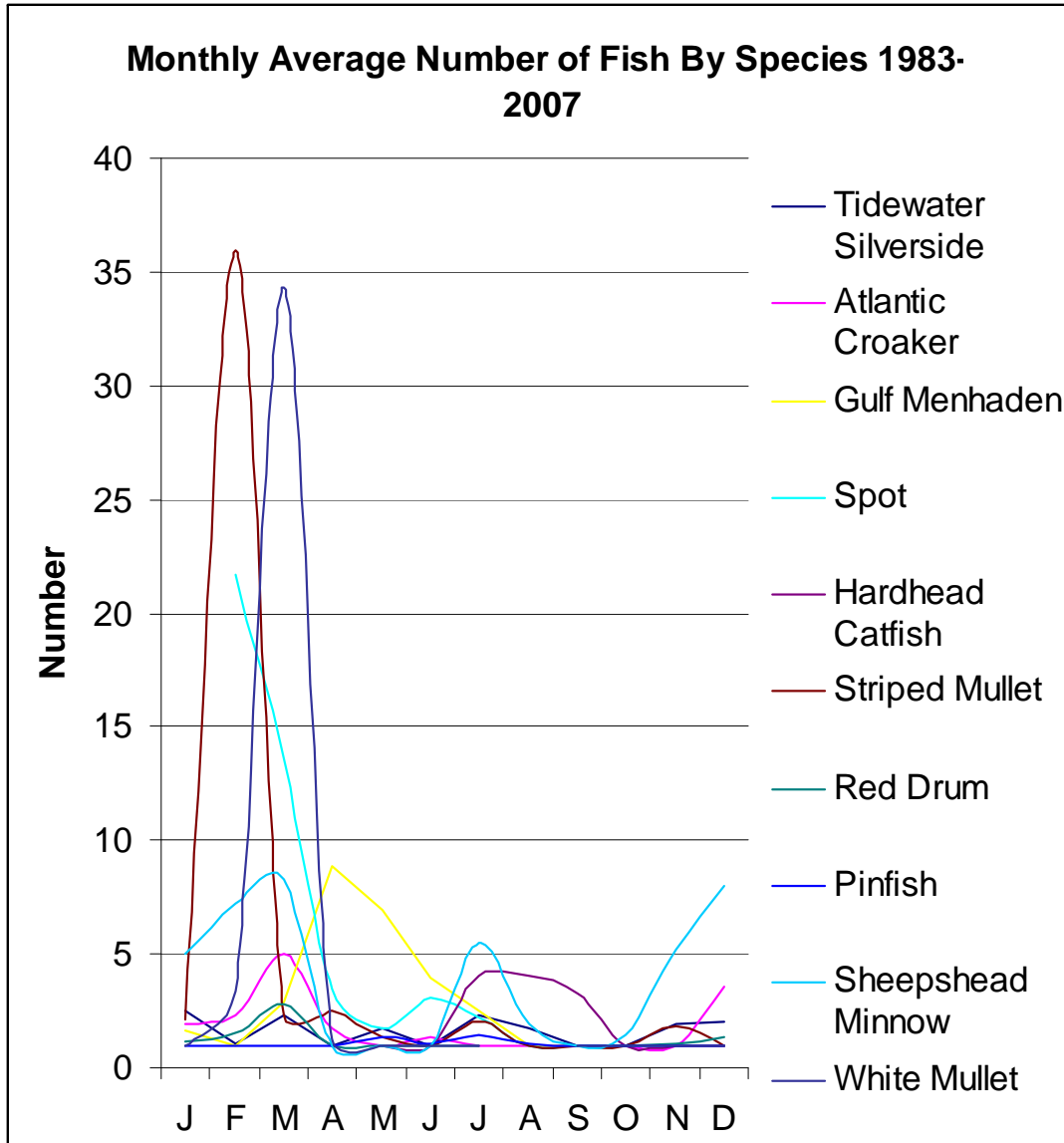


# TPWD Data

## Top 10 Fish Species from Bag Seines in Arroyo Colorado 1983-2007



# TPWD Data



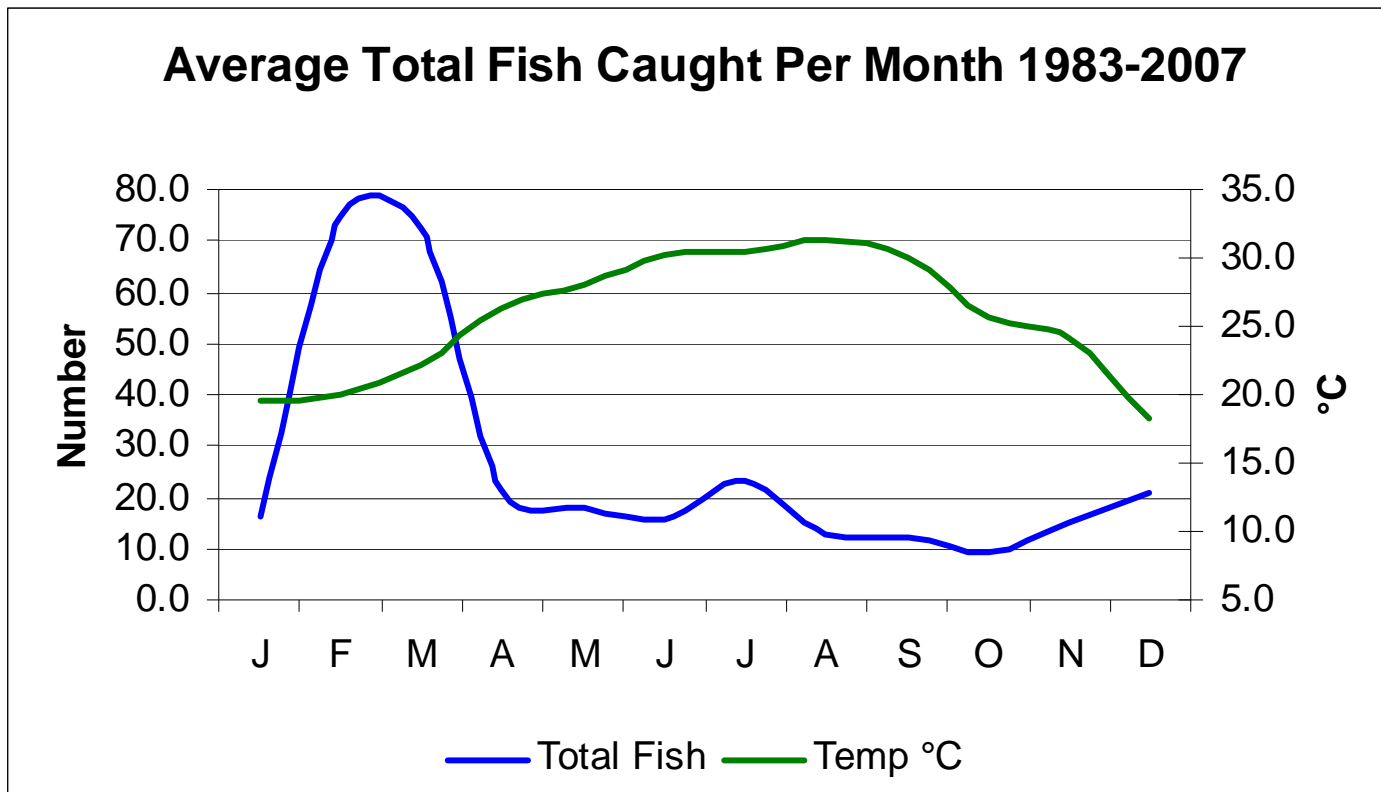
- Know Thy Data

- Beware of trends observed as artifacts of sampling

- (e.g. Using Gill net data for this analysis)

# Integrated Data

- Put it Together



# Fish Kills

- Kills and Spills- Alex Nuñez
- TPWD § 12.0011 RESOURCE PROTECTION.
  - (a) The department is the state agency with primary responsibility for protecting the state's fish and wildlife resources.
  - (b) The department's resource protection activities include:
    - (1) investigating fish kills and any type of pollution that may cause loss of fish or wildlife resources, taking necessary action to identify the cause and party responsible for the fish kill or pollution, estimating the monetary value of lost resources, and seeking restoration through presentation of evidence to the agency responsible for permitting or through suit in county or district court;
    - (2) providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects;
    - (3) providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources; and
    - (4) providing recommendations to the Texas Department of Water Resources on scheduling of in-stream flows and freshwater inflows to Texas estuaries for the management of fish and wildlife resources.



# Fish Kills

- Kills and Spills- Alex Nuñez
  - Density Counts
  - Water Quality
    - water sample
    - test for algal bloom (if D.O.)
    - identify algae
  - Contact TCEQ or GLO if pollution event



# What Can TPWD Do?

- Information sharing within TPWD
- Information sharing among Water Quality entities
- Scientific articles contributing to the body of knowledge
- Assist in planning of water quality and biological assessment studies of Arroyo Colorado
- Contact in event of a fish kill-
  - Alex Nuñez- [alex.nunez@tpwd.state.tx.us](mailto:alex.nunez@tpwd.state.tx.us)
  - Brianna Carlson- [bri.carlson@tpwd.state.tx.us](mailto:bri.carlson@tpwd.state.tx.us)
  - 24-hour contact number 512-389-4848

