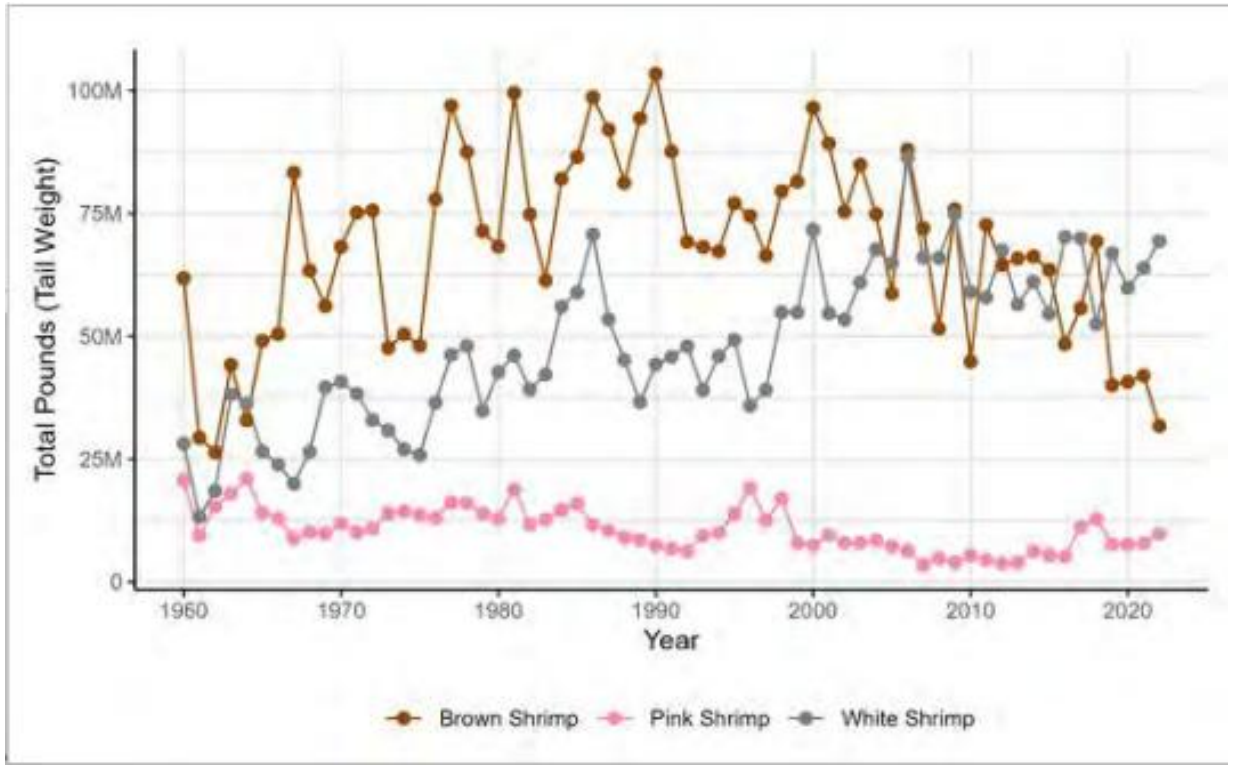
February SSC Meeting
SEDAR 87

SEDAR 87 Assessment Overview

- Represents new attempts at assessment of Gulf Penaeid Shrimp species
  - Brown, White, Pink Shrimp
- Conducted within SEDAR process
- Tested multiple novel assessment methods for the Gulf
- Overall goal was to improve the evaluation and subsequent management advice for the Gulf Shrimp fishery

Fishery Trends and Discussion

- Decrease in fleet size
  - Consolidation post early 2000s
- Decrease in effort over time
- Economic impacts influence harvest rather than biomass
- Shift in targeting for the fleet
- Larger shrimp and increased catches of White Shrimp

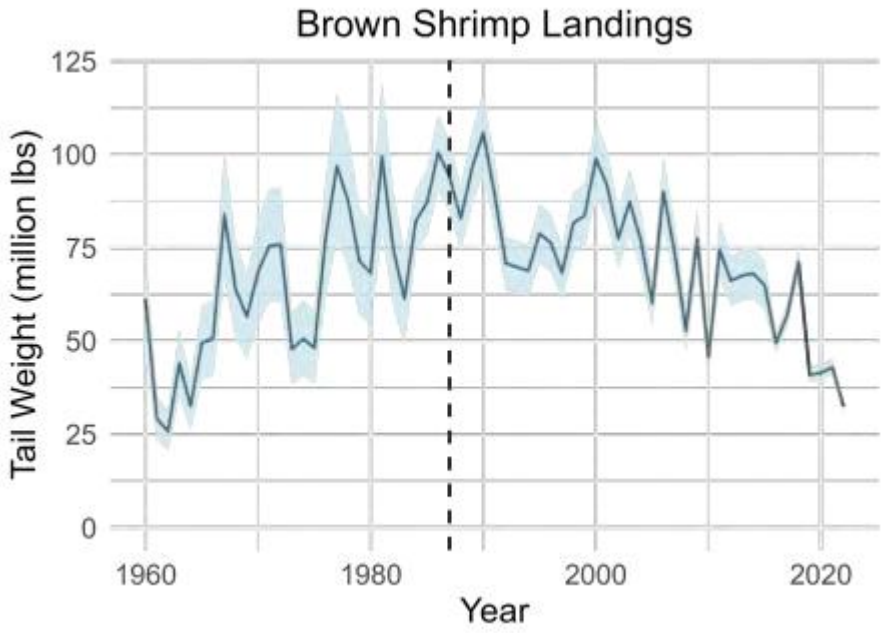


Models Tested

- JABBA Biomass Estimation
  - Uses catch data with simple population dynamics assumptions to project biomass over time
- VAST Spatial-Temporal Model
  - Relies heavily on standardized fishery independent survey data to inform stock density across a designated spatial area
- Empirical Dynamic Model
  - Relies on past observations from the fishery to project overall patterns in the stock
- Each model tested/evaluated for each species

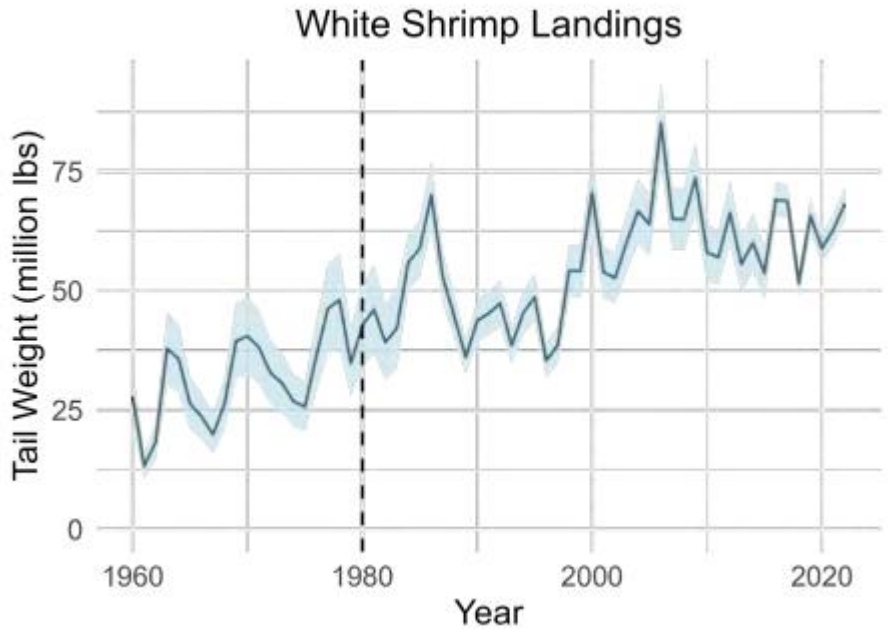
Brown Shrimp

- EDM Model performed best and recommended
- Historical peak in harvest 105 million pounds of tails (mpt)
- Estimated MSY – 215 mpt
- Current biomass far above target
  - Stock considered healthy
- Decline in harvest and effort observed



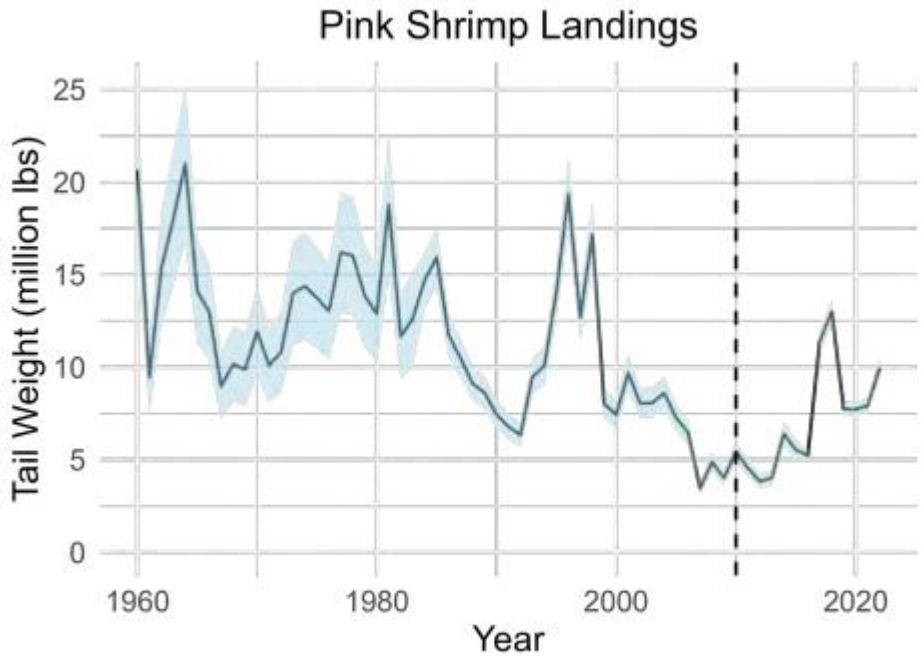
White Shrimp

- EDM Model performed best and recommended
- Peak harvest for fishery – 85 mpt(2006)
- Estimated MSY – 88 mpt
- Biomass above target
  - Stock not considered overfished
- Differing trajectory in historical harvest



Pink Shrimp

- No model showed adequate performance for consideration
  - Short time series for index
  - Inconsistent landings time series
- Reliable stock model unavailable
- Historical catch used as proxy
  - Third highest catch selected
  - MSY Proxy – 19 mpt
  - Recent catch below assigned level



Recommendations from SSC

- SSC expressed positive sentiment for the effort undertaken in the evaluation of these stocks
- EDM accepted for White and Brown Shrimp
- Historical landings proxy used for Pink Shrimp
- ABC set equal to MSY
- Review landings periodically

Motion 1

The SSC considers the Empirical Dynamic Modeling approach for Gulf brown and white shrimp, with developed benchmark estimates (brown shrimp MSY = 215.07 mpt; white shrimp MSY = 87.80 mpt) as consistent with the best scientific information available.

Motion carried without opposition.

Motion 2

The SSC recommends using the third highest catch of pink shrimp from 1996 (19.3 mpt) for establishing MSY and providing management advice to the Gulf Council.

Motion carried with one opposed and two abstentions.

Motion 3

The SSC recommends ABC = MSY for the brown, white, and pink shrimp fisheries in the Gulf.

Motion carried with three opposed and one abstention.

Motion 4

The overfishing threshold is defined as the maximum fishing mortality threshold (MFMT). The MFMT for each penaeid shrimp stock is defined as the exploitation rate at MSY (F_{MSY}). The values are: brown shrimp = 0.460; white shrimp = 0.592.

Motion carried without opposition.

Motion 5

The overfishing threshold for pink shrimp is defined as annual landings relative to the MSY proxy. If this ratio exceeds 1, the stock status is overfishing.

Motion carried with one opposed.

Motion 6

The overfished threshold is defined as the minimum stock size threshold (MSST). The MSST for each penaeid shrimp stock is defined as the biomass at MSY (B_{MSY}). The values are:

- Brown shrimp: 405.39 mpt
- White Shrimp: 148.35 mpt
- Pink shrimp: undefined

Motion carried without opposition.