



## *Shrimp FMP Amendment 2 Overview*

*DEPARTMENT OF ENVIRONMENTAL QUALITY*

Marine Fisheries

Shrimp Advisory Committee | Chris Stewart, Jason Rock, Dan Zapf | March 2, 2021



# *Presentation Outline*

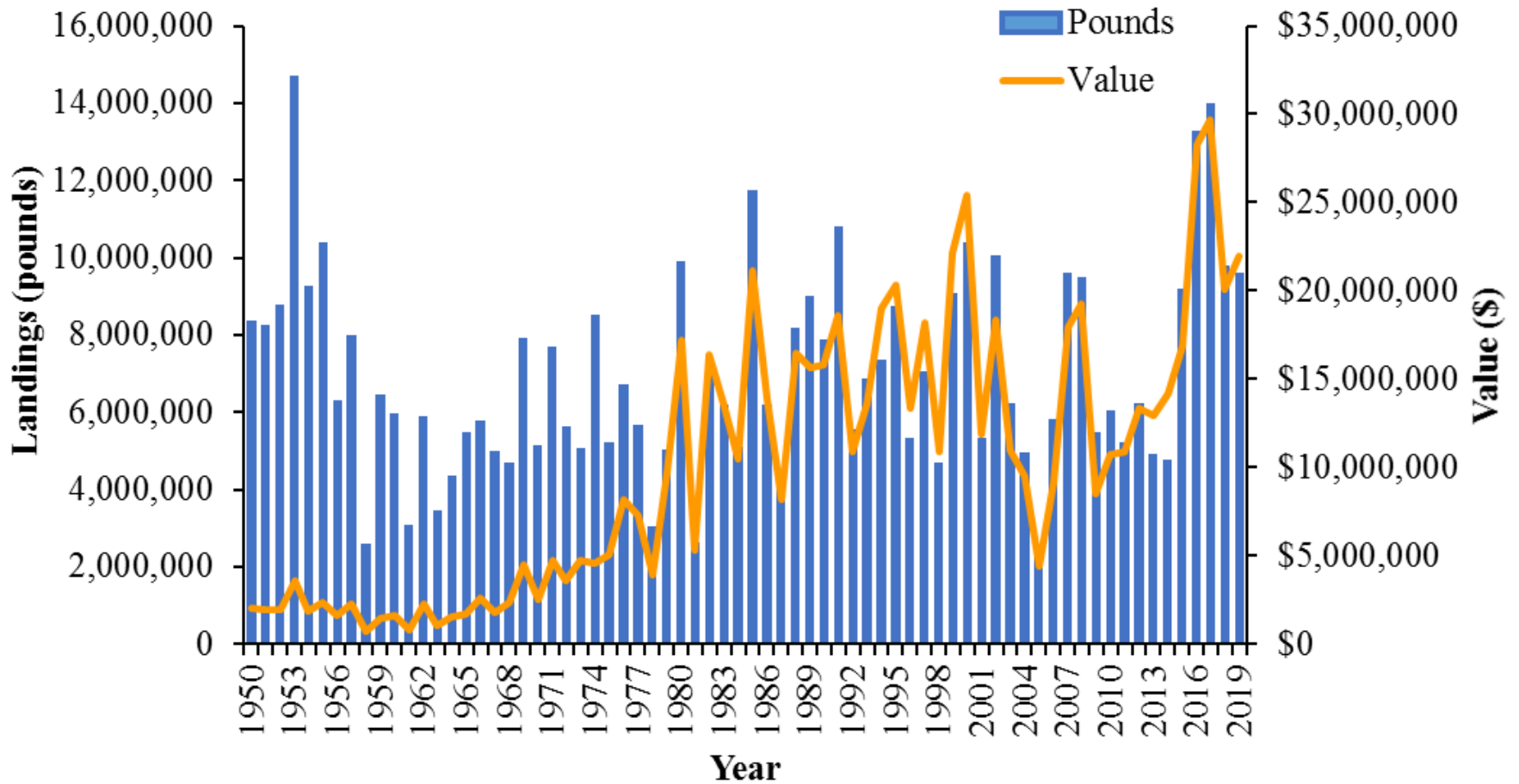
- Overview of Fishery
  - Management unit
  - Commercial landings
  - Recreational landings
  - Bycatch
  - Habitat
- Draft Amendment 2
  - Goal and Objectives
  - Issue Papers



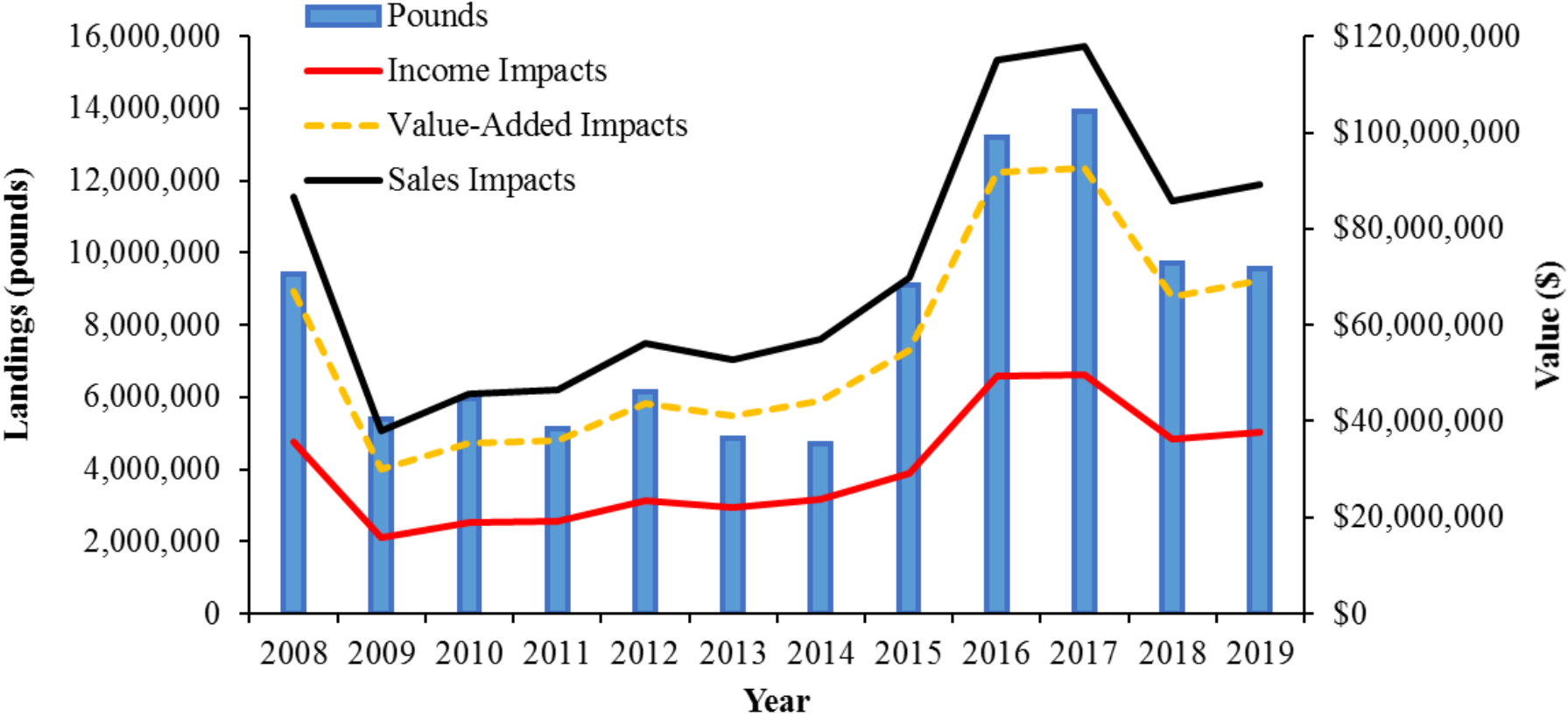
## Management Unit

Species	Spawning	Juvenile Recruitment	Season
<p><b>Brown Shrimp</b></p>  <p>(<i>Farfantepenaeus aztecus</i>)</p>	February-March	February-June, peaking in April and May	Summer and fall
<p><b>Pink Shrimp</b></p>  <p>(<i>F. duorarum</i>)</p>	April-July	June-October	Spring
<p><b>White Shrimp</b></p>  <p>(<i>Litopenaeus setiferus</i>)</p>	March-November	June-August/ September, peaking in early June and mid- August	Late Summer and fall

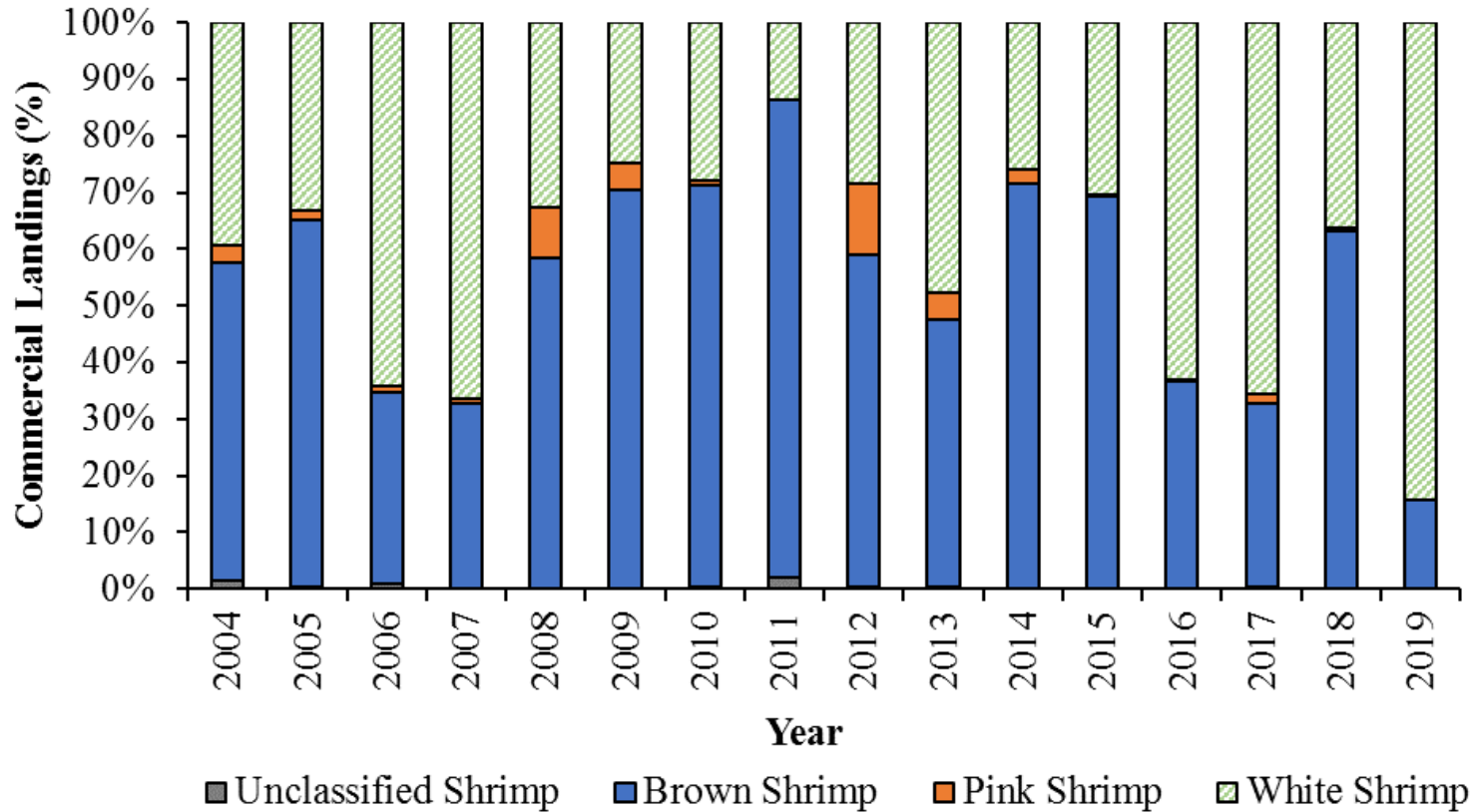
# Commercial Landings and Unadjusted Value



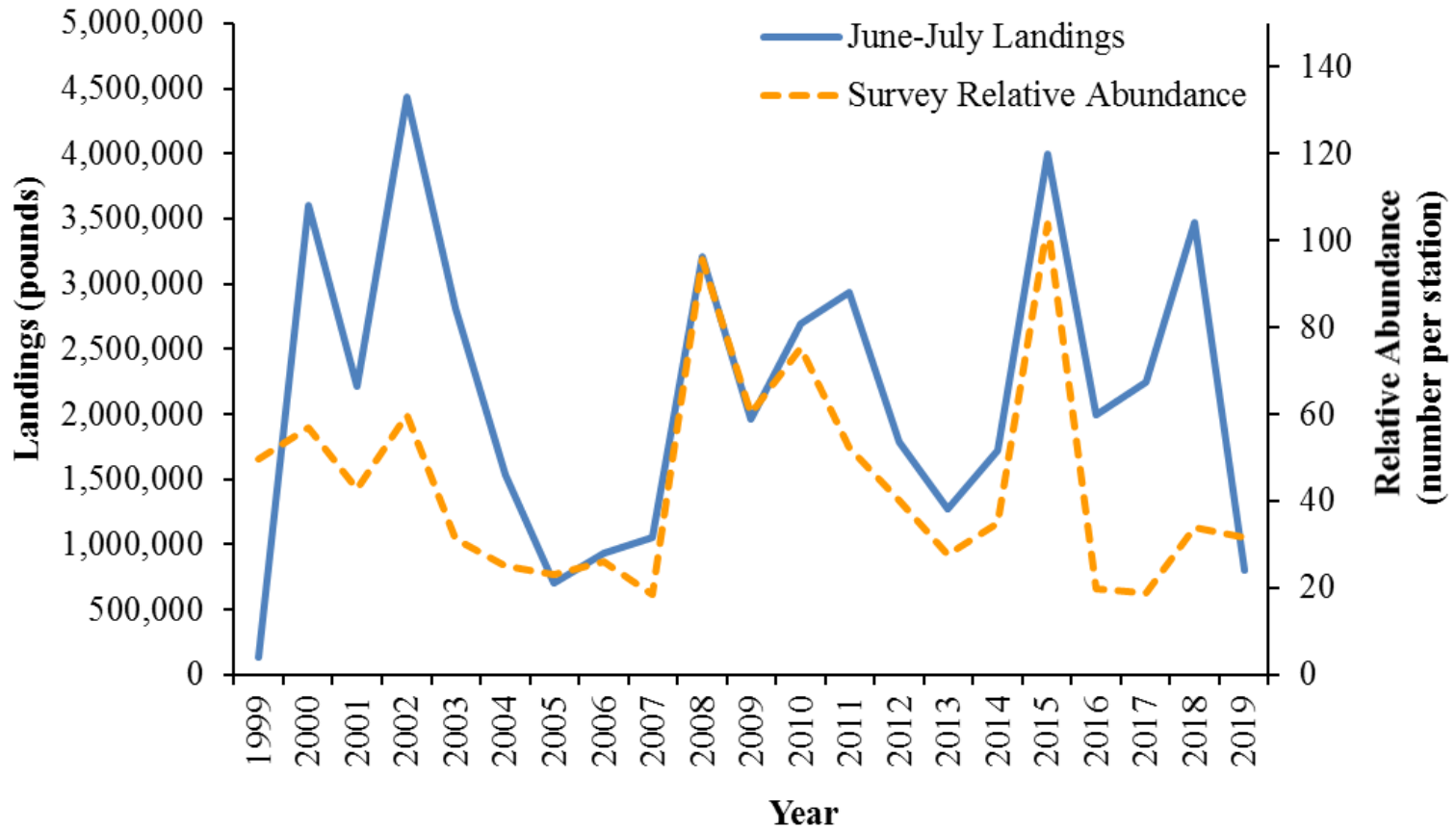
# Commercial Landings and Adjusted Value



# Commercial Landings by Species



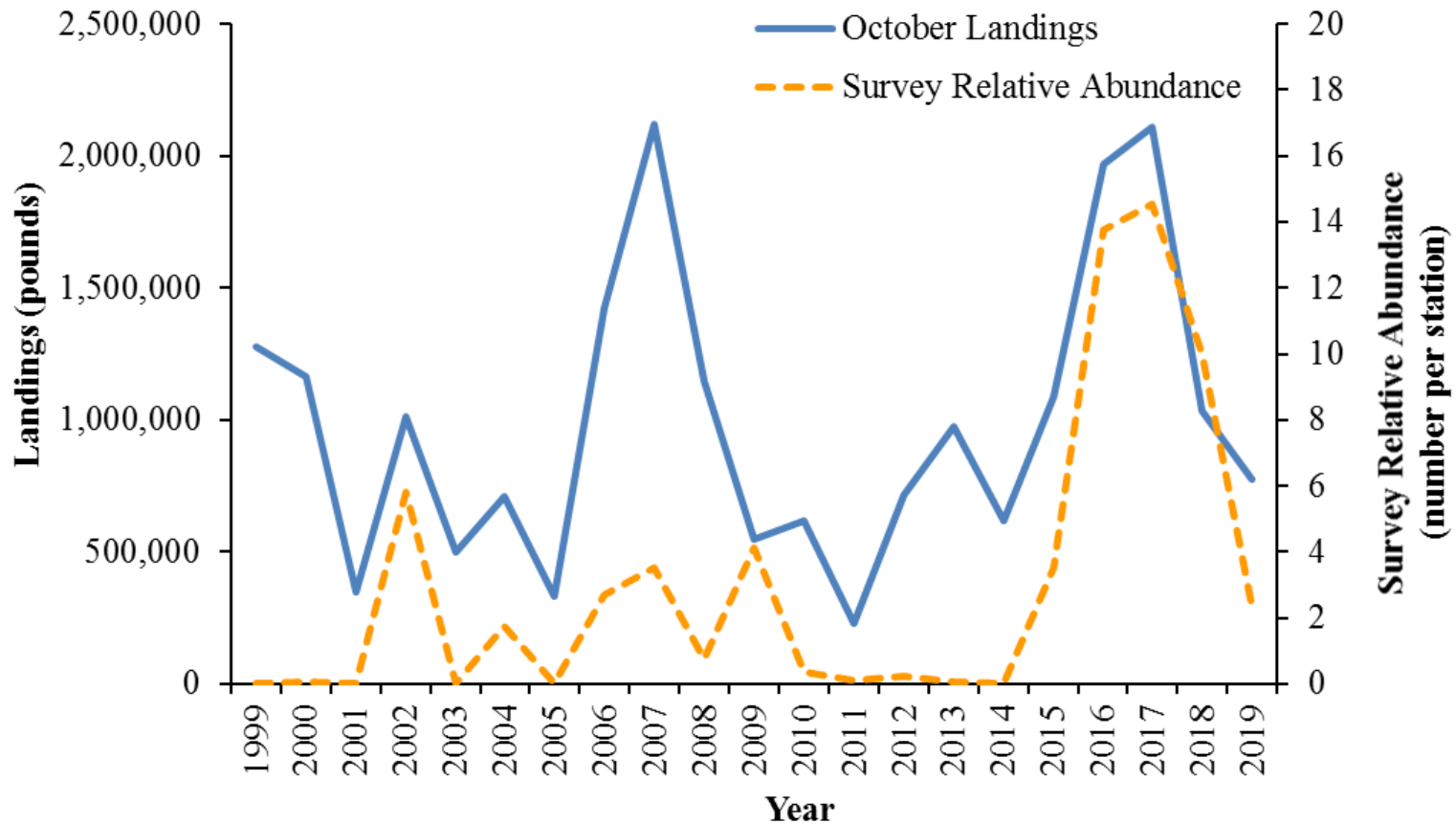
# Stock Status



*\*Brown shrimp only*



# Relative Abundance of White Shrimp

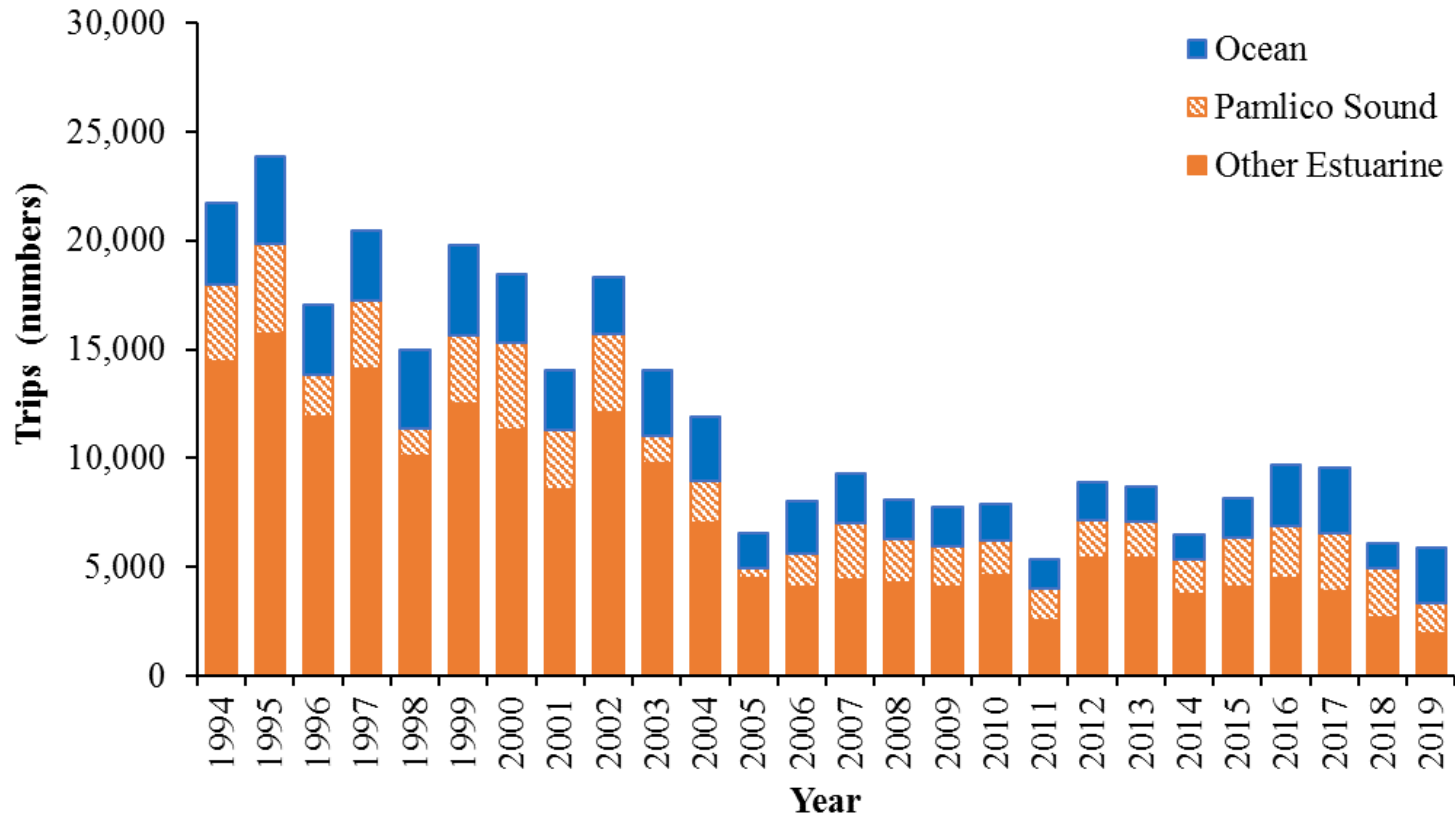


*\*White shrimp only*

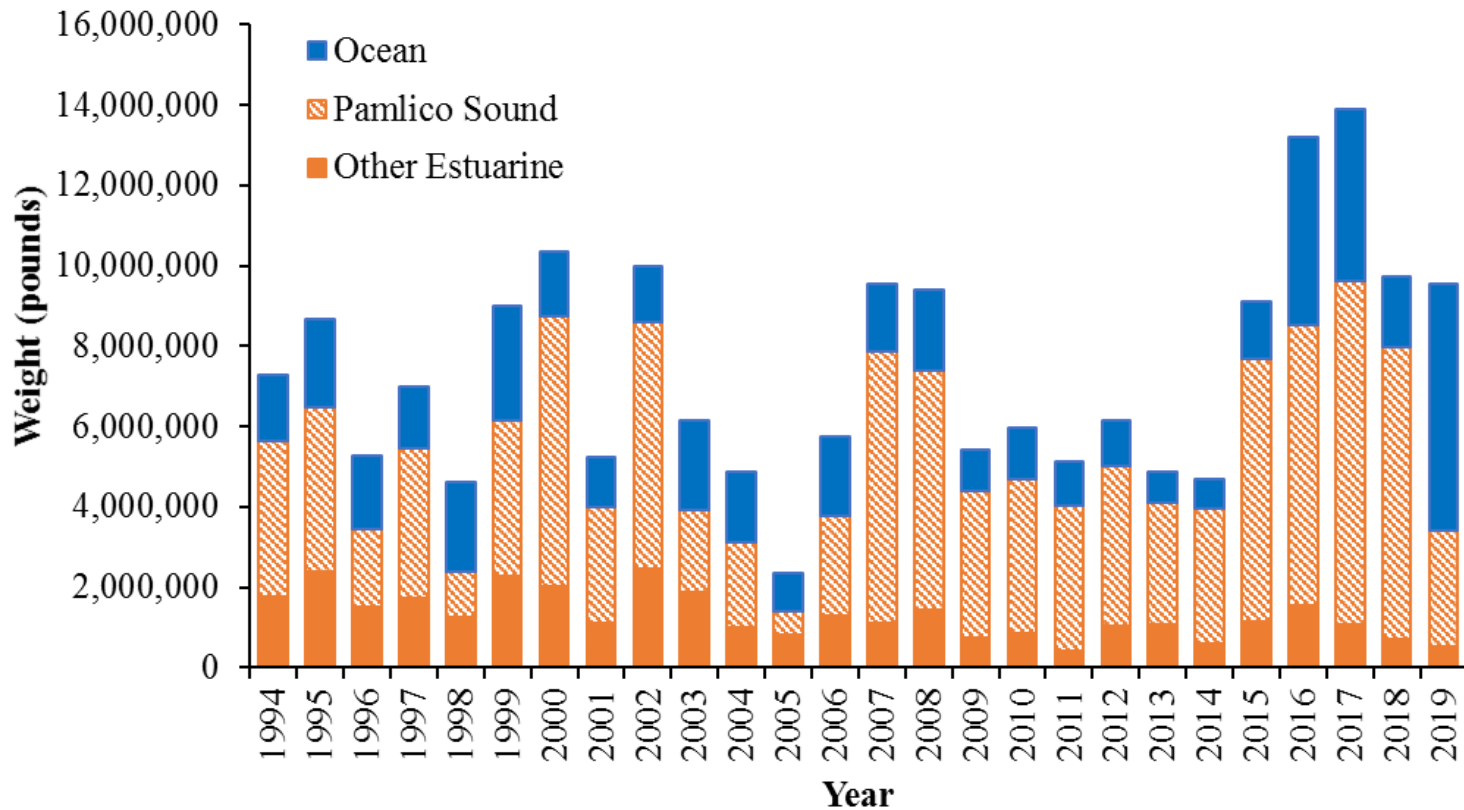




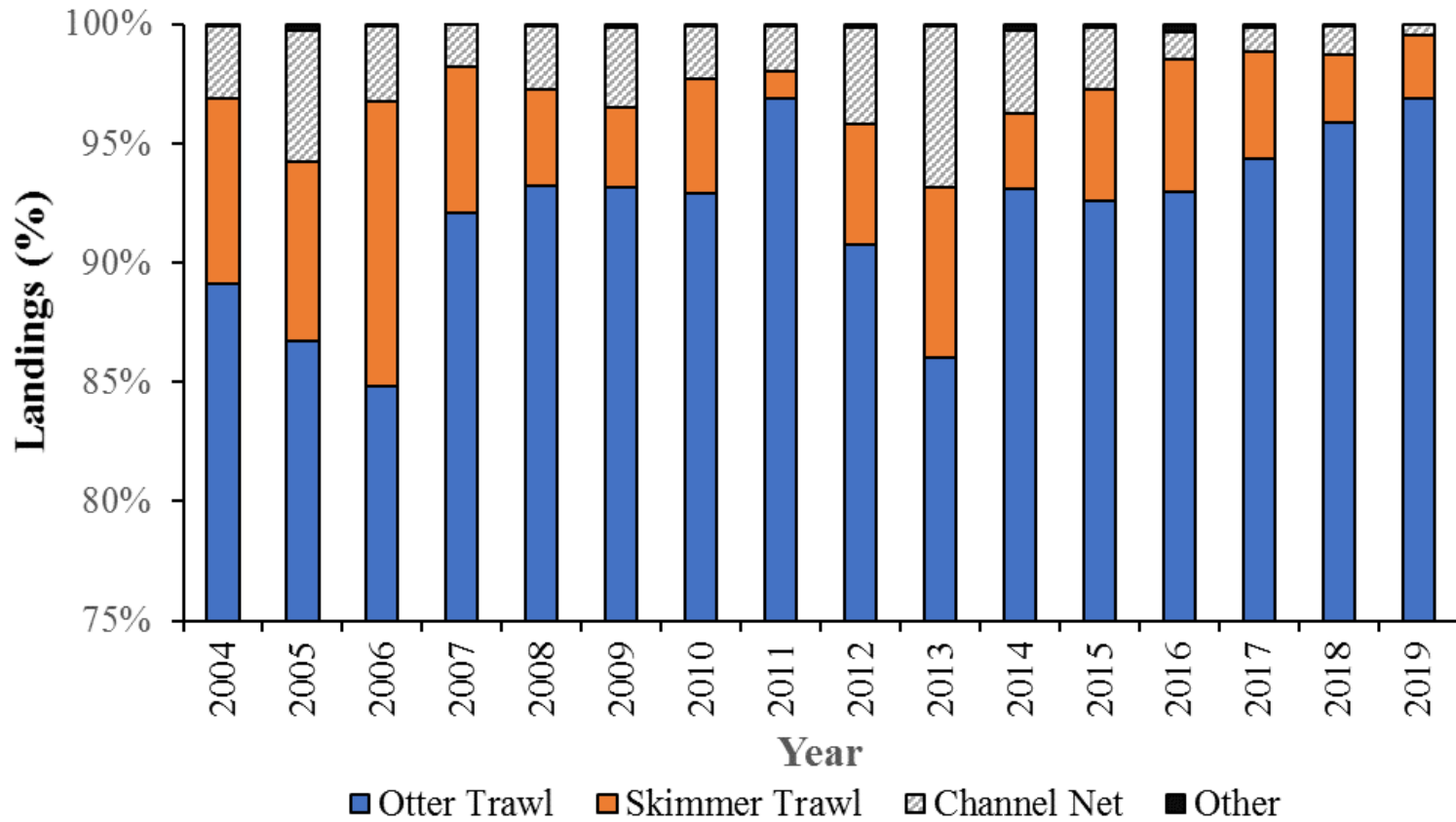
# Commercial Trips



# Commercial Landings by Waterbody



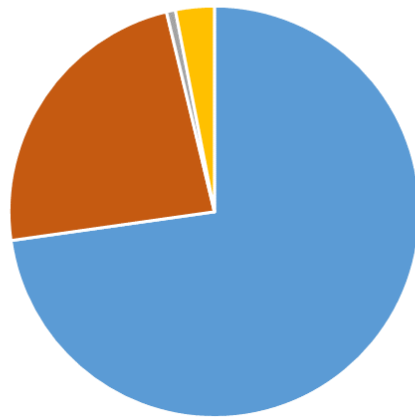
# Commercial Landings by Gear



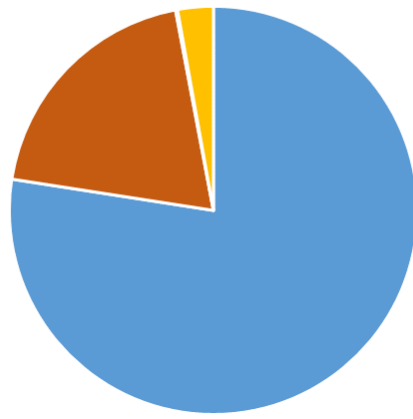
# Commercial Landings by Vessel Length and State

- NC (0 to 50 ft)
- NC (>50 ft)
- Out of State (0 to 50 ft)
- Out of State (>50 ft)

Percent Vessels

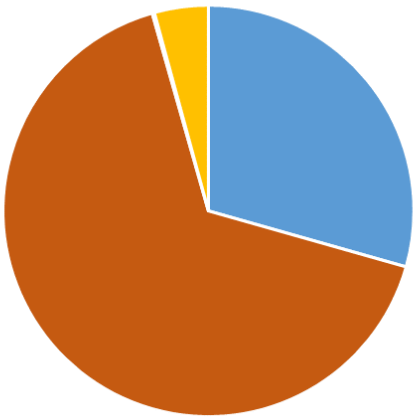


Percent Trips

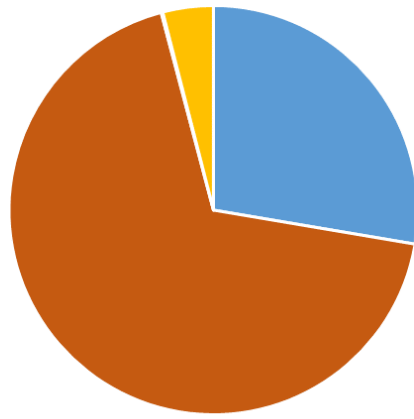


**2019**

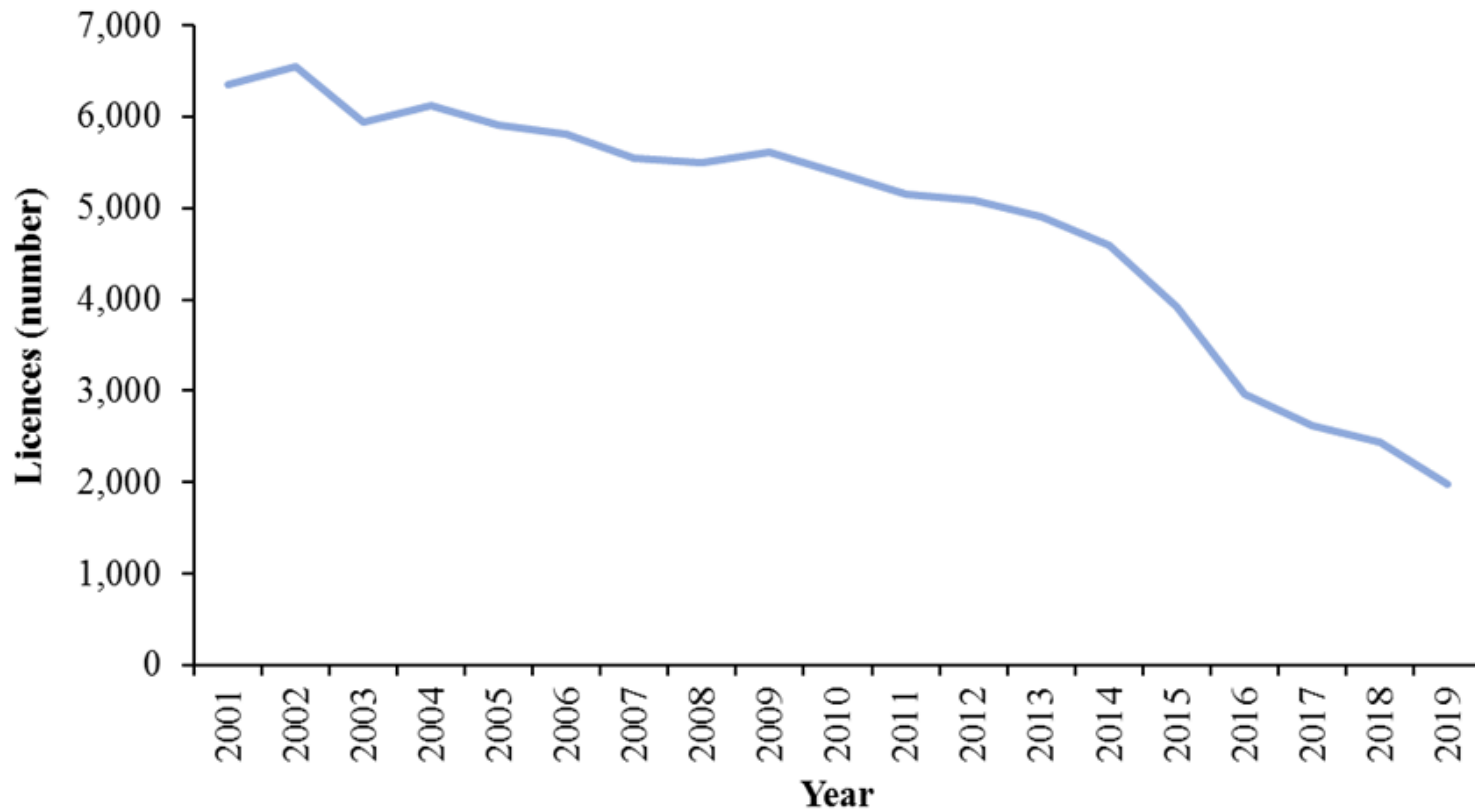
Percent Landings



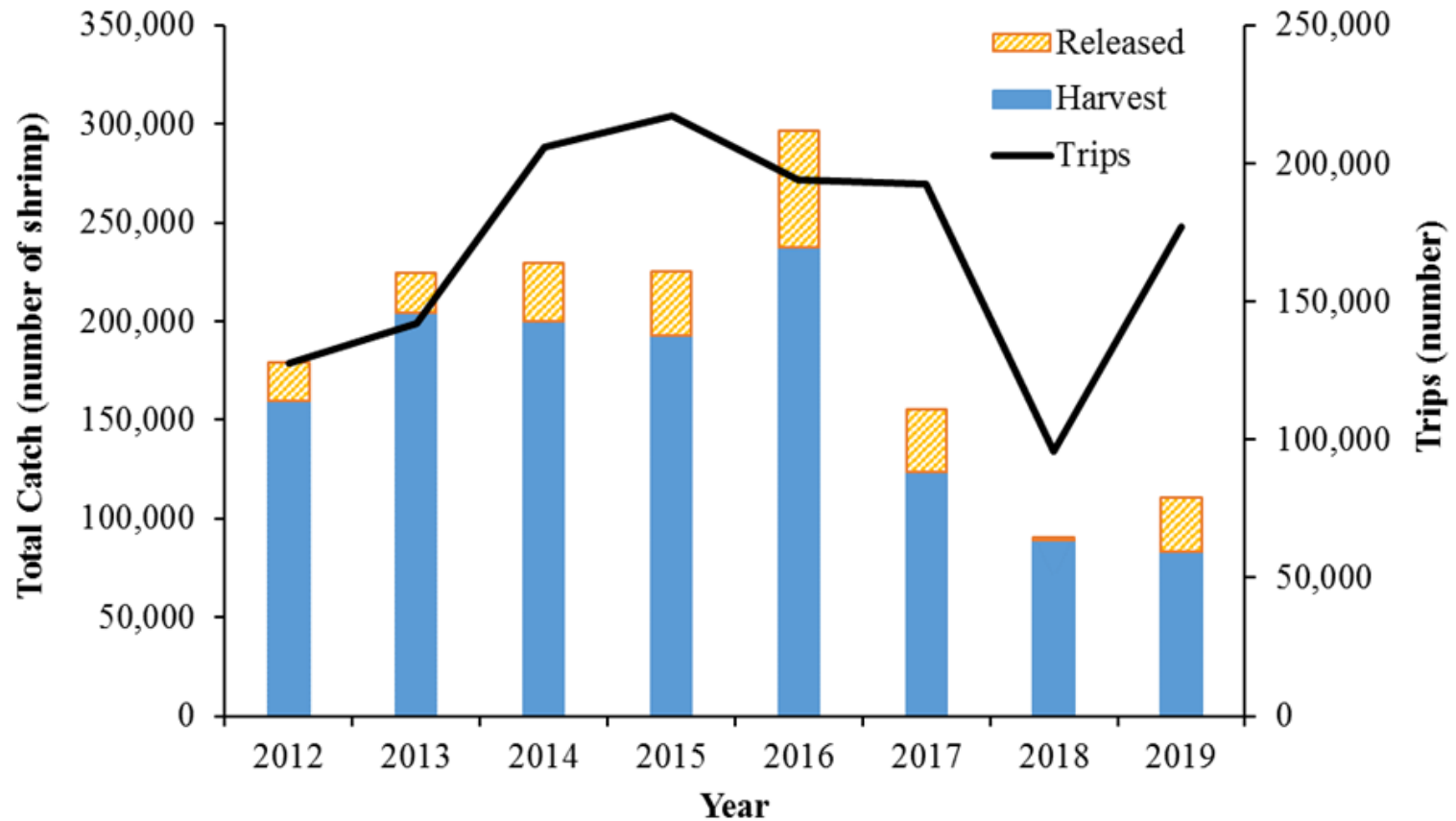
Percent Value



# *Recreational Commercial Gear License (RCGL)*



# Recreational Cast Nets and Seines



# *Shrimp Trawl Bycatch*

## **Bycatch**

The portion of catch taken incidentally to the target catch because of non-selectivity of fishing gear to either species or size differences.

- Incidental – Retained or sold
- Discarded – Returned to sea



# *Shrimp Trawl Management in North Carolina*

**1970s** – Marine Fisheries Commission (MFC) – Scrap fishing rules modified

**1977** – Designation of nursery areas

**1987** – Albemarle Sound closed to trawling

**1980s** – Turtle Excluder Device (TED) and Bycatch Reduction Device (BRD) testing

**1991** – MFC directed DMF to reduce bycatch and incorporate goal in all management considerations

**1992** – NC first state to require BRDs

**1992** – TEDs in all otter trawls

**1994** – Trawling in seagrass beds restricted, weekend trawling, Special Secondary Nursery Area opening dates established



# *Shrimp Trawl Management in North Carolina*

**2006** – Shrimp FMP – Area closures, gear restrictions

**2015** – Amendment 1 – Area closures, Industry Workgroup, gear testing/restrictions

**2016 to present** – Characterization studies and gear testing



# *Bycatch Characterization*

## Bycatch Studies

- Bycatch data is highly variable
- Spatial and temporally limited
- Methods of calculation inconsistent
- Estimates obtained by different methods cannot be compared
- Gear testing studies should not be used to estimate bycatch

## Methods of Calculation

- Ratios (F:S)
- CPUE (Mean-per-unit)



## *Bycatch Species of Concern*

Species	Coastwide Stock Status**	NCDMF Characterization Studies*	
		(% of Catch)	(Size Range)
Atlantic croaker	Unknown	5% - 49%	70 - 180 mm
Southern flounder	Overfished, overfishing	<1% - 2%	80 - 355 mm
Spot	Unknown	1% - 21%	60 - 210 mm
Weakfish	Depleted	<1% - 6%	50 - 305 mm

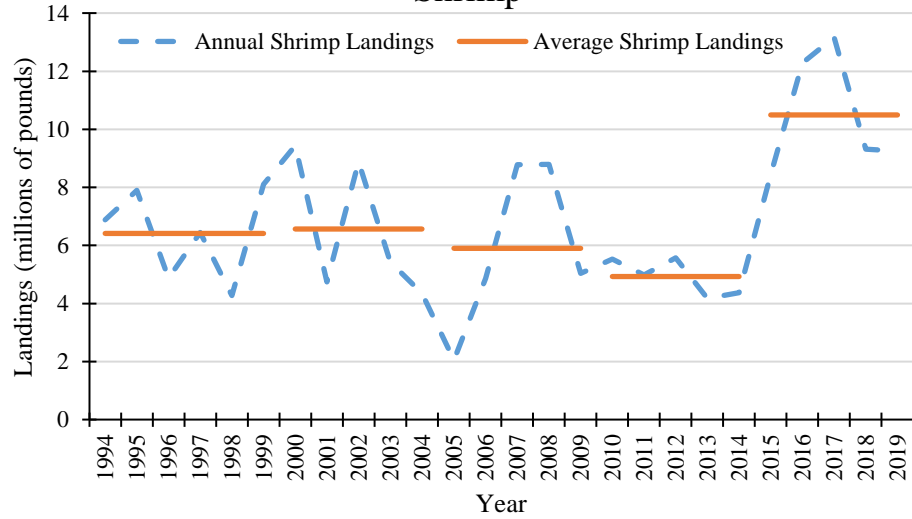
\*Brown 2009, 2010, 2015, 2016, 2017, 2018

\*\*ASMFC 2016, 2017a, 2017b, 2020; Flowers et al. 2017

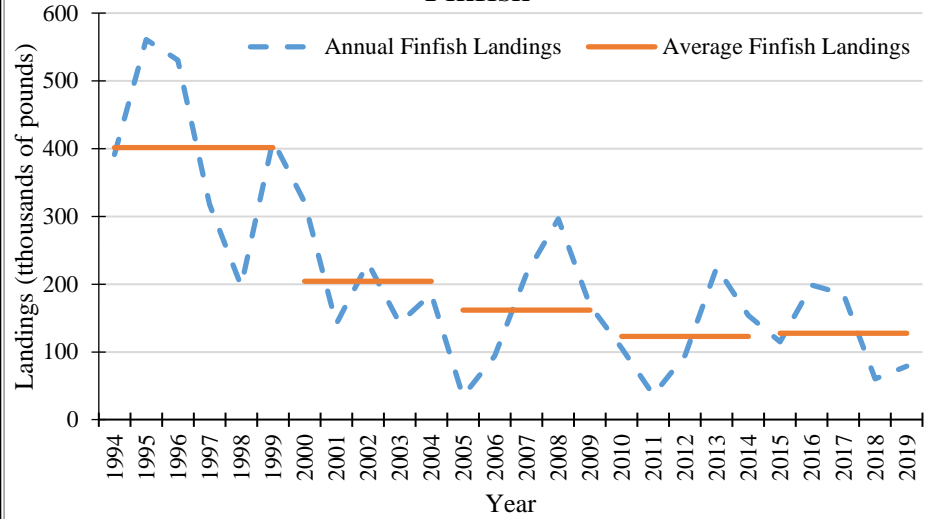


# Incidental Shrimp Trawl Landings

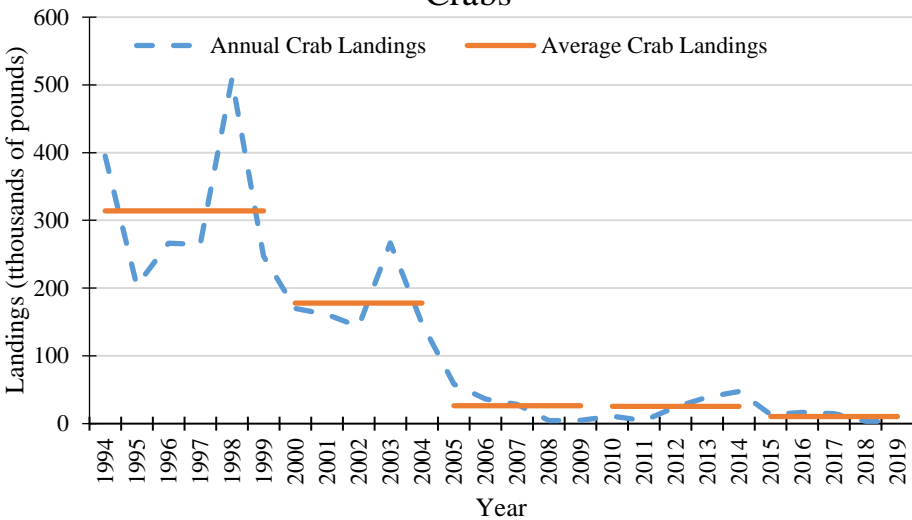
## Shrimp



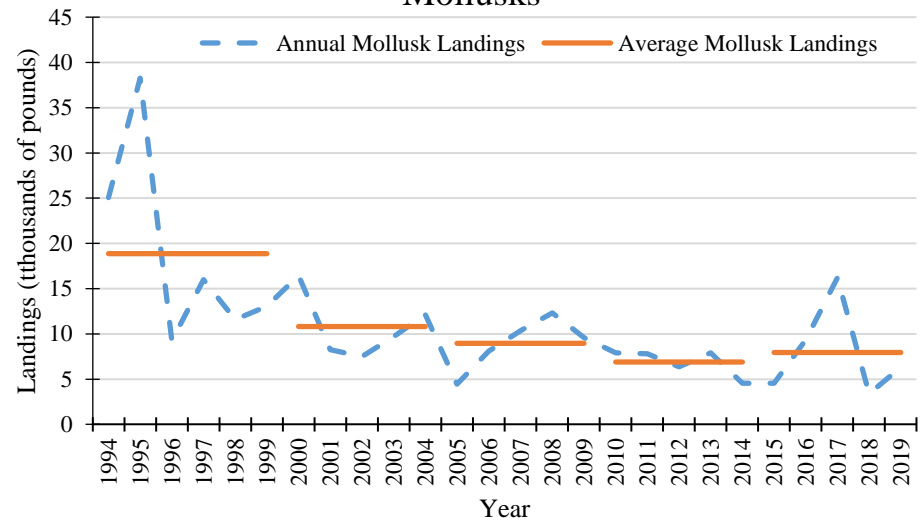
## Finfish



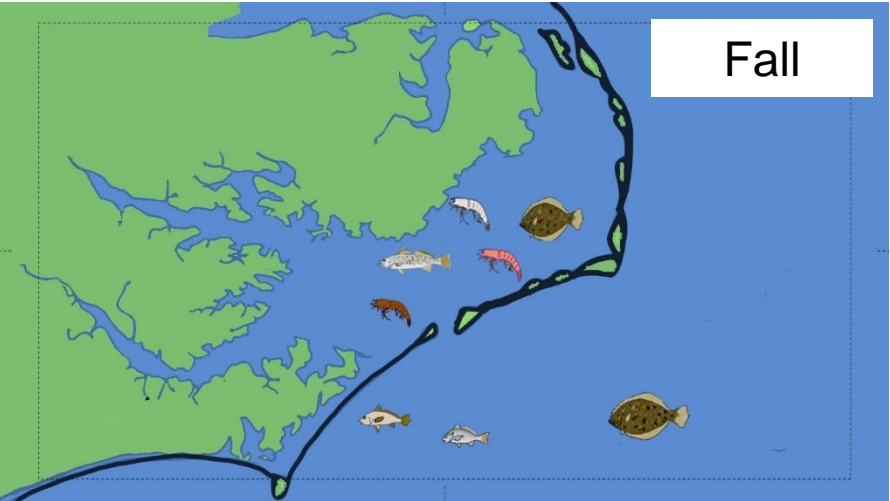
## Crabs



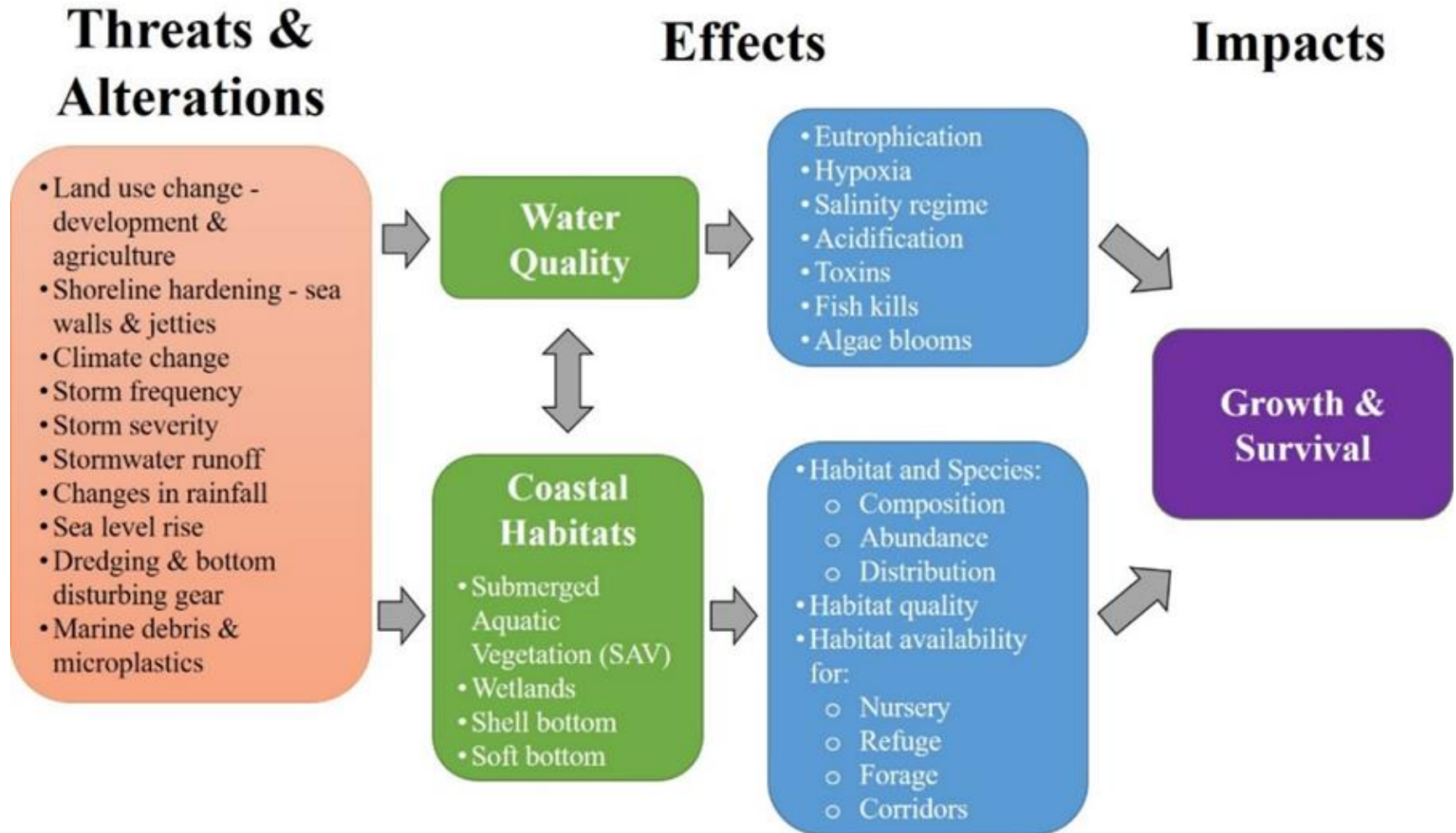
## Mollusks



# Life History of Target and Bycatch Species of Concern

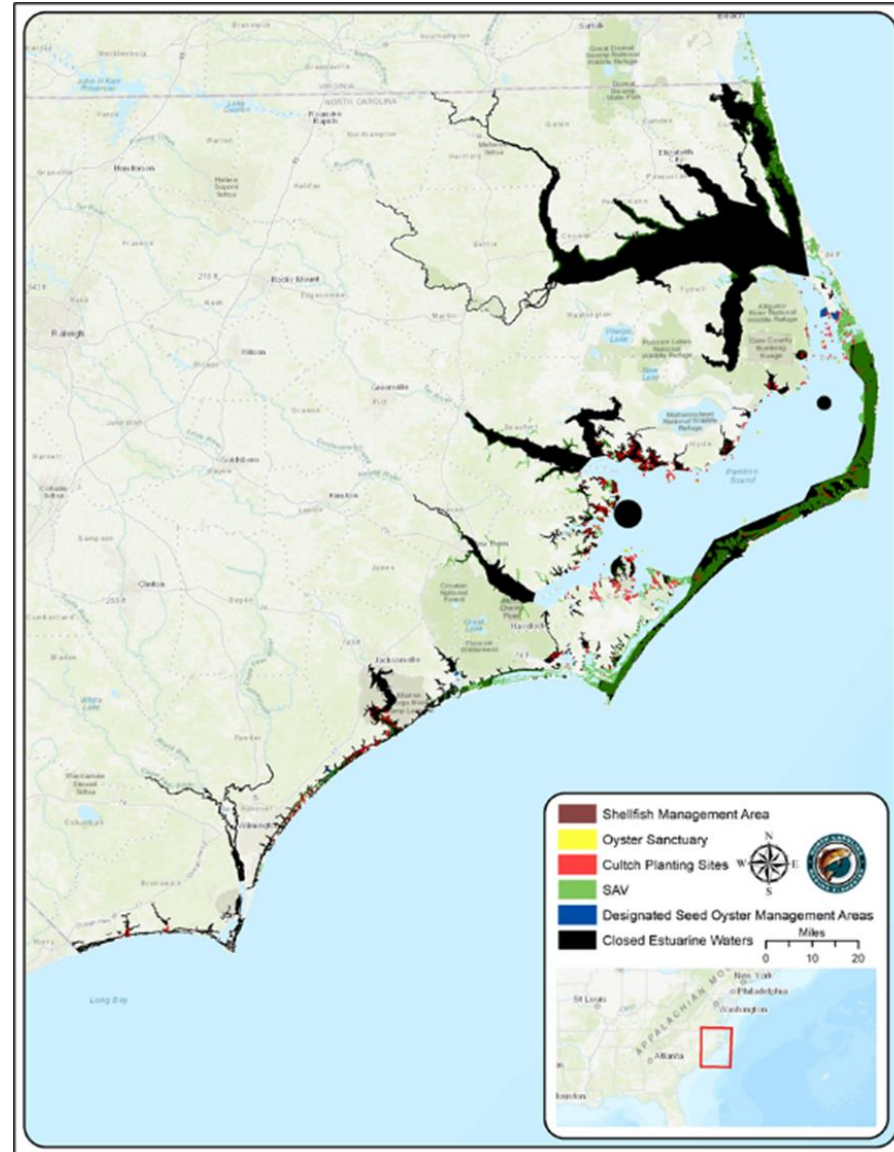


# Habitat Threats and Alterations



# *Existing Protections*

- Nursery Areas
- Trawl Net Prohibited Areas
- Seed Oyster Management Areas
- Oyster Sanctuaries
- Crab Spawning Sanctuaries
- Shrimp Trawl Prohibited Areas
- Albemarle Sound trawl closure



## *Draft Amendment 2: Goal and Objectives*

### **Goal:**

Manage the shrimp fishery to provide adequate resource protection, optimize long-term harvest, and minimize ecosystem impacts.

### **Objectives:**

- Reduce bycatch of non-target species of finfish and crustaceans, as well as protected, threatened, and endangered species.
- Promote the restoration, enhancement, and protection of habitat and environmental quality in a manner consistent with the CHPP.
- Develop a strategy through the CHPP to review current nursery areas and to identify and evaluate potential areas suitable for designation.
- Use biological, environmental, habitat, fishery, social, and economic data needed to effectively monitor and manage the shrimp fishery and its ecosystem impacts (i.e., bycatch, habitat degradation).
- Promote implementation of research and education programs designed to improve stakeholder and the general public's understanding of shrimp trawl bycatch impacts on fish population dynamics.





## *Draft Amendment 2 Issue Papers*

- Data richness varied across issue papers and were a key factor in developing discussion points
- Habitat benefits and bycatch reductions from all measures are non-quantifiable
- Issues are inter-related and must be considered in conjunction with one another
- Issues address concerns identified in petitions and commission input
- Discussion points provided to begin the conversation with the Shrimp Advisory Committee



# Draft Amendment 2: Issues



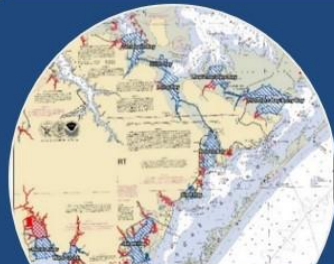
## Habitat Protection

### Overview:

- ▶ Submerged aquatic vegetation (SAV) and shell bottom habitats are critical habitat for many economically important finfish and invertebrates.

### Example Options:

- ▶ Specific trawl closures could be implemented to protect submerged aquatic vegetation (SAV) and shell bottom habitats



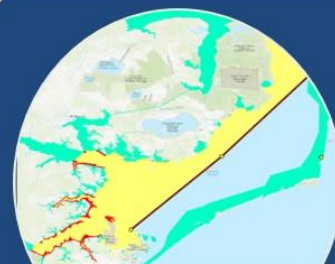
## SSNAs

### Overview:

- ▶ Special secondary nursery areas (SSNAs) provide essential habitat for many developing sub-adult finfish and invertebrates.

### Example Options:

- ▶ Change designation of special secondary nursery areas to permanent secondary nursery areas, static seasons, and delayed openings



## Area Restrictions

### Overview:

- ▶ Connectivity between protected areas and creating migration corridors to better encompass the life cycle and distribution of key finfish species.

### Example Options:

- ▶ Area closures in Pamlico Sound and adjacent water bodies



## Managing Effort

### Overview:

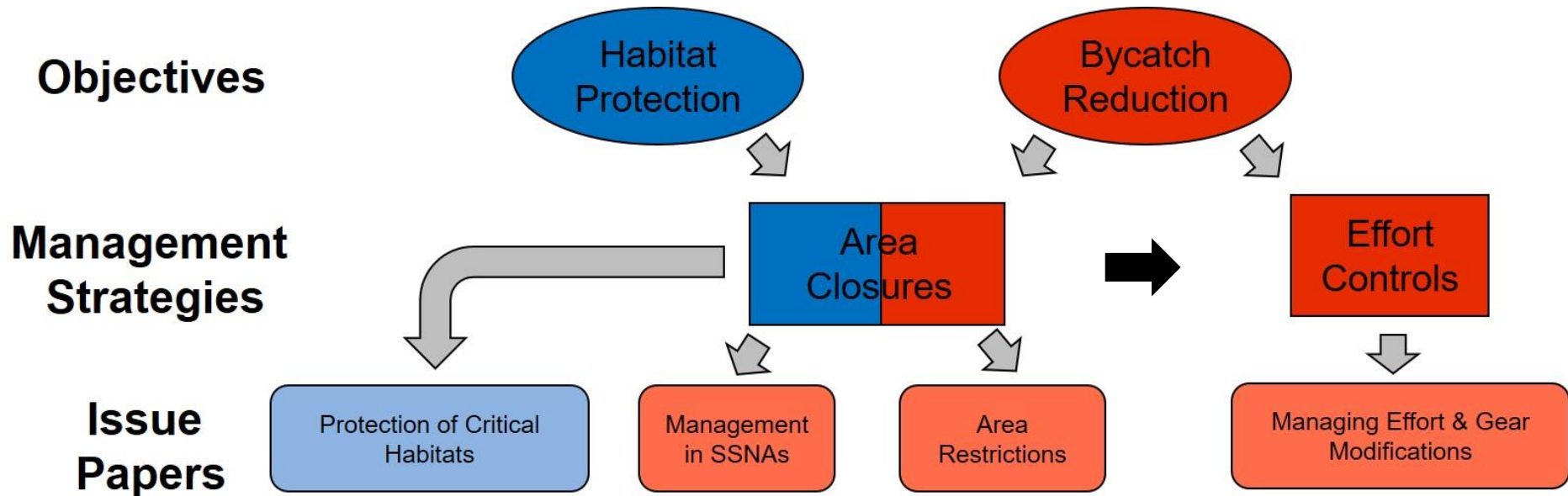
- ▶ Limited data for these measures due to variability in fishing practices, habitat, and environment make bycatch reductions hard to quantify. Management measures may be used to reduce effort and limit conflicts.

### Example Options:

- ▶ Gear modification, time limits, harvest limits, and increased access for non-trawl gears



# Draft Amendment 2: Issues



# Questions?

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