NOAA FISHERIES

SEDAR 57
Spiny Lobster

Review Workshop
Presentation 1
INTRODUCTION

July 9-11, 2019

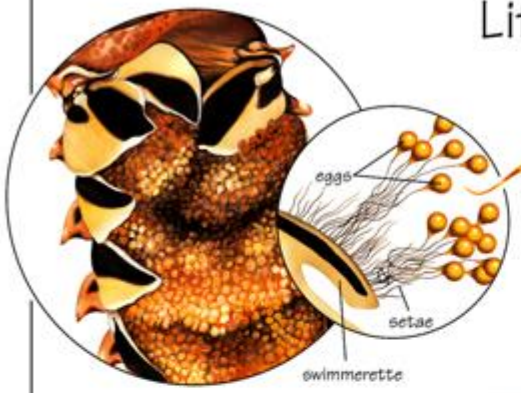
Review Workshop Presentation 1 - INTRODUCTION

- Species Background
- Management and Assessment History
- Overview of Available Data
- SEDAR 57 Project Schedule
- RW Terms or Reference
- RW Agenda

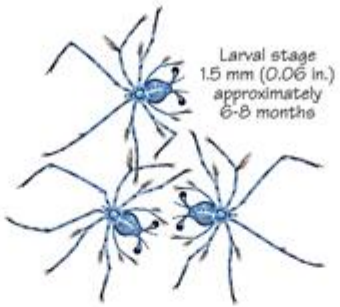
CARIBBEAN Spiny Lobster

Panulirus argus

Life Cycle



❷ Each egg takes up water and expands until the egg membrane breaks and the new lobster larva is released.

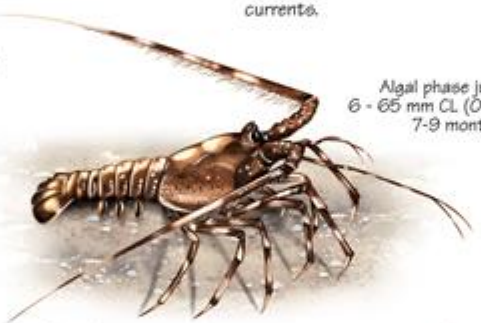


Larval stage
1.5 mm (0.06 in.)
approximately
6-8 months

❸ After hatching, transparent phyllosome (leaf-bodied) larvae can be carried several hundred miles by ocean currents.

❶ After the eggs are fertilized, the female carries them in the tiny hairs (setae) under her tail until they hatch.

Postlarval stage
6 - 7 mm carapace length (CL)
(<1 in.) 2-4 weeks

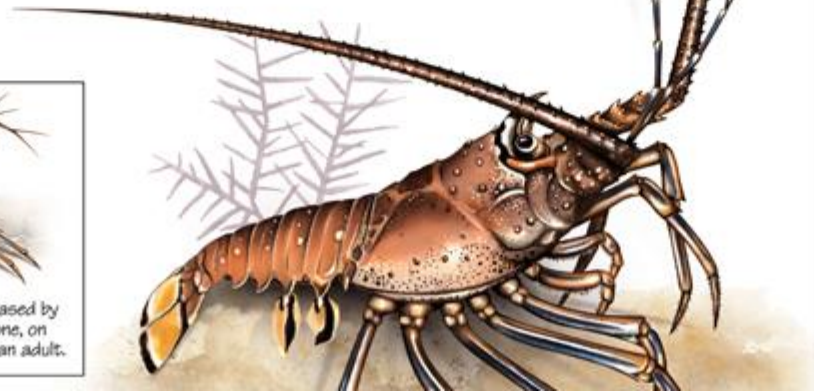


Algal phase juveniles
6 - 65 mm CL (0.2 - 2.6 in.)
7-9 months

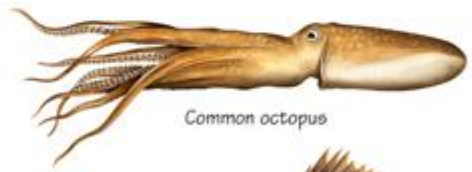
❺ After about a week, the transparent post-larvae takes on the appearance of a miniature adult lobster. The striped and banded color pattern creates a disruption and camouflages the juvenile from visual predators. Juvenile lobsters will live within Laurencia until they reach a size of about 45-65 mm CL long.

❹ Phyllosome metamorphose into the puerulus post-larva and transit from the open ocean to near-shore nursery habitats (primarily a macroalgae called *Laurencia*).

Up to two million eggs may be released by a large female lobster. As few as one, on average, might survive to become an adult.



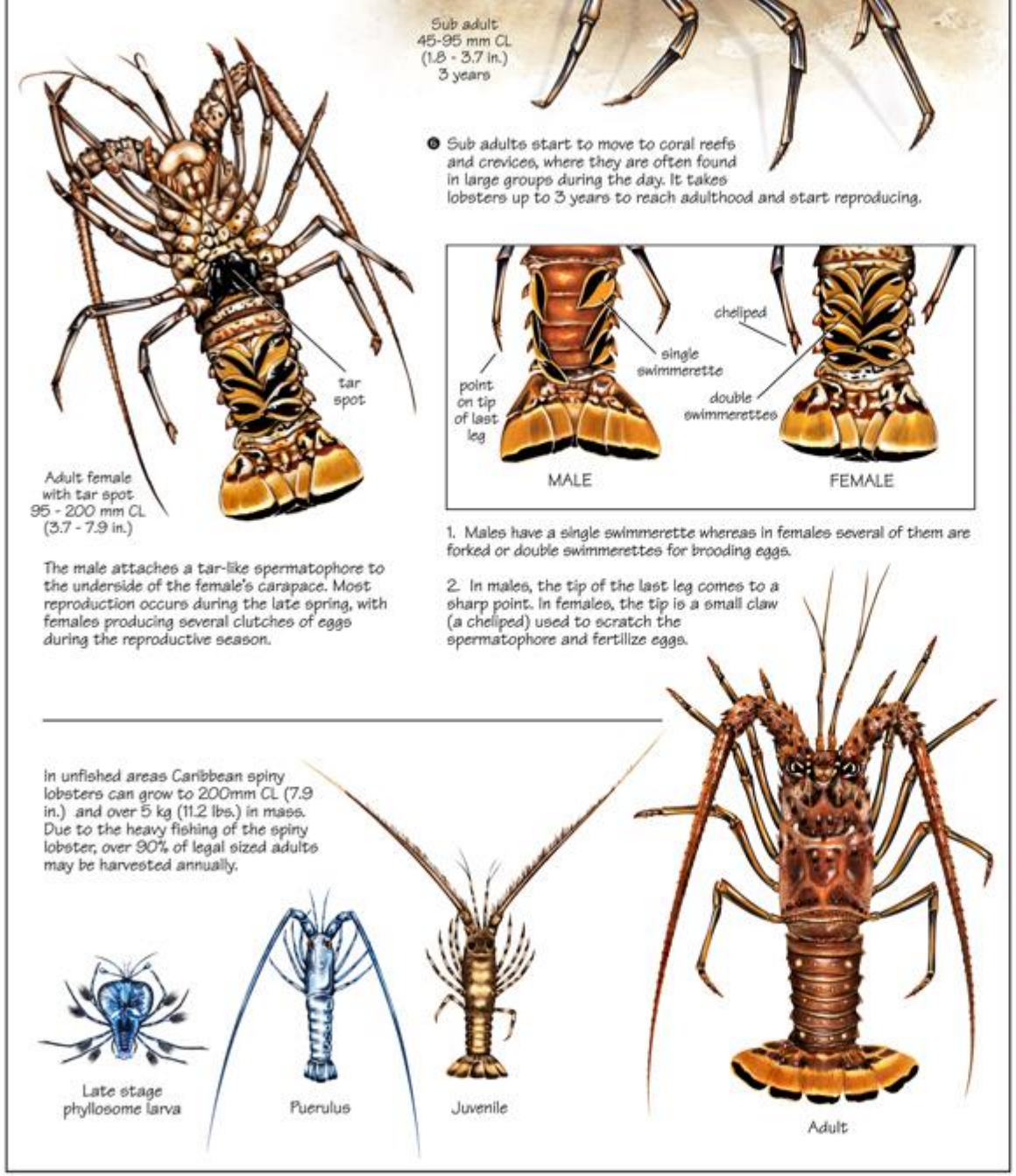
Natural Predators



Common octopus

Nassau grouper

Loggerhead



PERRY INSTITUTE FOR MARINE SCIENCE
CARIBBEAN MARINE RESEARCH CENTER

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The Caribbean Council develops management measures through fishery management plans (FMPs) for the spiny lobster fisheries in federal waters.

Caribbean Fishery Management Council
CFMC

Summary of Management Measures

- Annual catch limit is allocated by island management areas (Puerto Rico, St. Croix, and St. Thomas/St. John).
- Minimum size limits of 3.5 (8.9 cm) carapace length.
- Bag limits for recreational harvest in federal waters of the U.S. Caribbean.
- Prohibition on spears, hooks, piercing devices, explosives, or poisons to harvest spiny lobster.
- Prohibition on the use of gillnets and trammel nets in federal waters to harvest spiny lobster.
- Traps, pots, buoys, and boats should be identified and marked.
- Non-wooden traps must have biodegradable escape panels.
- Fishermen may not bring egg-bearing female lobsters aboard a vessel (they may be kept in pots or traps until the eggs are shed).
- Spiny lobsters must be whole when they are brought to port.
- Similar restrictions on importing spiny lobsters.

Assessment History

Spiny Lobster Stock Units Assessed	Assessment Method	Assessment Reference
St. Thomas/St. John trap fishery **St. Croix dive fishery**	Comparison of multiple data-limited models	**SEDAR 46 (2016)**
US Caribbean	Stock production analyses (ASPIC)	**SEDAR 8 (2005)**
US Caribbean	Yield per recruit analysis	Mateo 2004
Puerto Rico	Dynamic production model	Mateo and Die 2004
US Caribbean	Examining landings and length frequency	Bolden 2001
St. Croix	Production model (Schaefer and Fox)	Mateo and Tobias 2000
Puerto Rico	Examining CPUE and length frequency	Matos-Caraballo 1999
US Caribbean	Examining landings and CPUE	Bohnsack et al. 1990

- To date, stock assessment results have not been used as quantitative catch advice.

Current ACLs

Effective 2012

PR: 327,920 lb (148,742 kg)

STX: 107,307 lb (48,674 kg)

STT: 104,199 lb (47,264 kg)

	Puerto Rico		St. Croix	St. Thomas/St. John
	Commercial Sector	Recreational Sector		
Fishery Management Unit (FMU)	Annual Catch Limit Pounds	Annual Catch Limit Pounds (Number of Fish)	Annual Catch Limit Pounds	Annual Catch Limit Pounds
Angelfish	8,984	4,492 (1,667)	305	7,897
Boxfish	86,115	4,616 (2,810)	8,433	27,880
Goatfishes	17,565	362 (814)	3,766	320
Grunts	182,396	5,028 (11,531)	36,881	37,617
Wrasses	54,147	5,050 (4,613)	7	585
Jacks	86,059	51,001 (37,945)	15,489	52,907
Scups & Porgies	24,739	2,577 (3,079)	4,638	21,819
Squirrelfish	16,663	3,891 (8,510)	121	4,241
Surgeonfish[1]	7,179	3,590 (5,365)	33,603	29,249
Triggerfish & Filefish	58,475	21,929 (11,620)	24,980	74,447
Spiny Lobster	327,920	N/A	107,307	104,199
	U.S. Caribbean Exclusive Economic Zone			
	Annual Catch Limit			
[1]Tilefish	14,642			
[1]Aquarium Trade	8,155			

* Pounds of whole fish

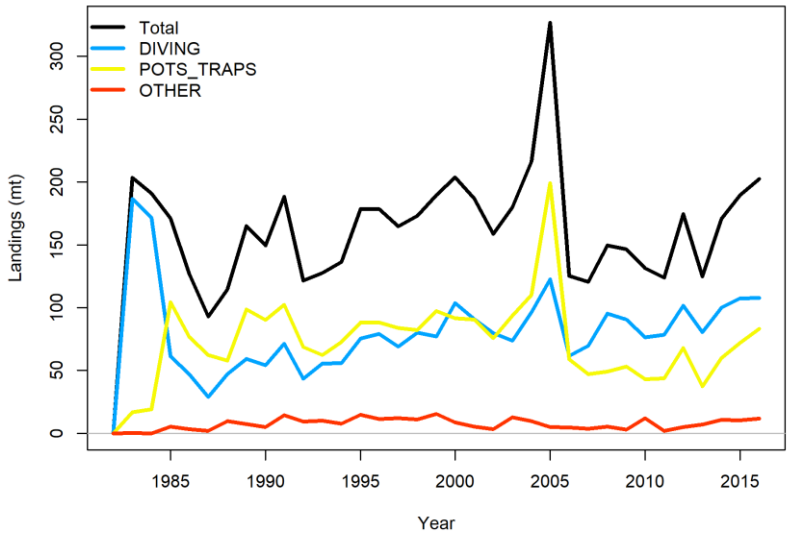
[1] The ACL for the Tilefish FMU and the aquarium trade species is a single value set for the entire Caribbean exclusive economic zone.

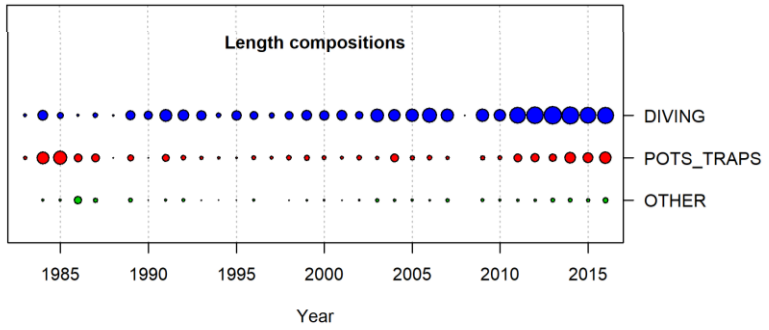
Available Data

- Life history Studies
  - Mortality
  - Age and Growth
  - Maturity
- **Fishery-Dependent Data**
  - Commercial Fishery Landings (Removals)
  - Commercial Fishery Biological Samples

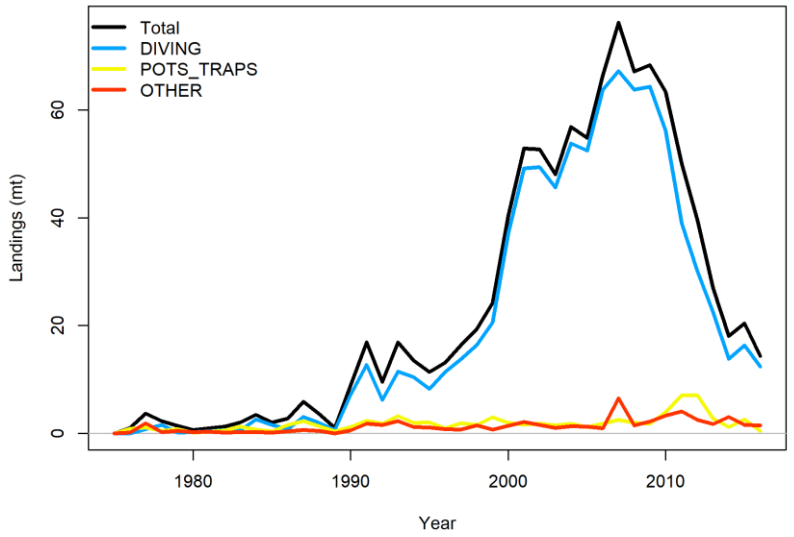
Fishery-Dependent Data

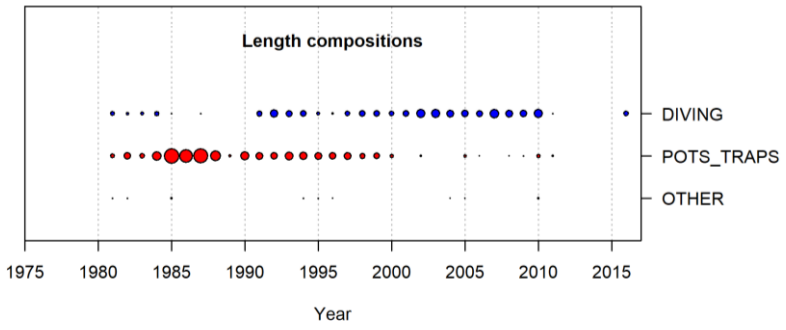
PR



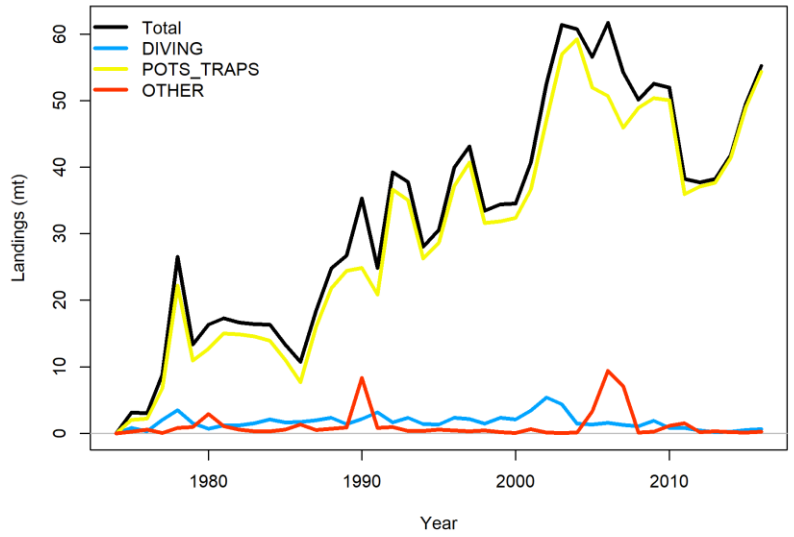


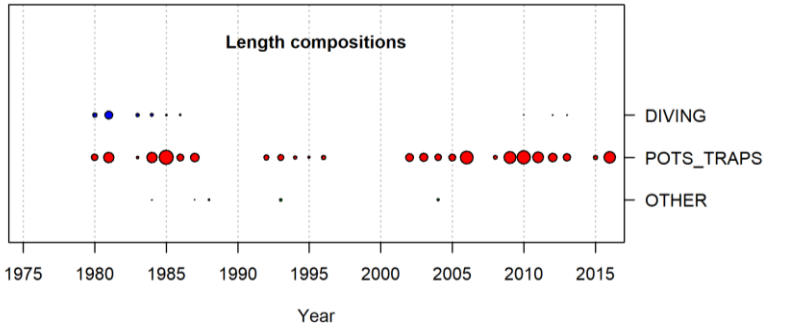
STX





STT

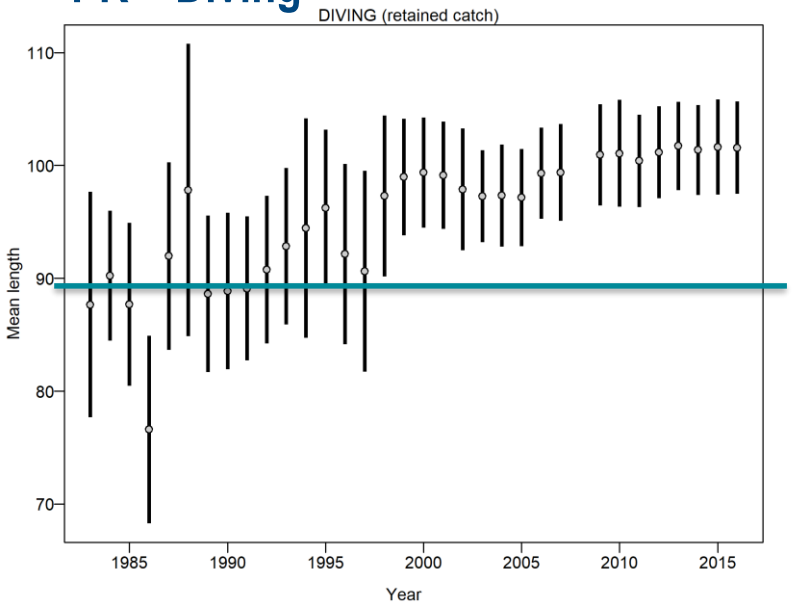




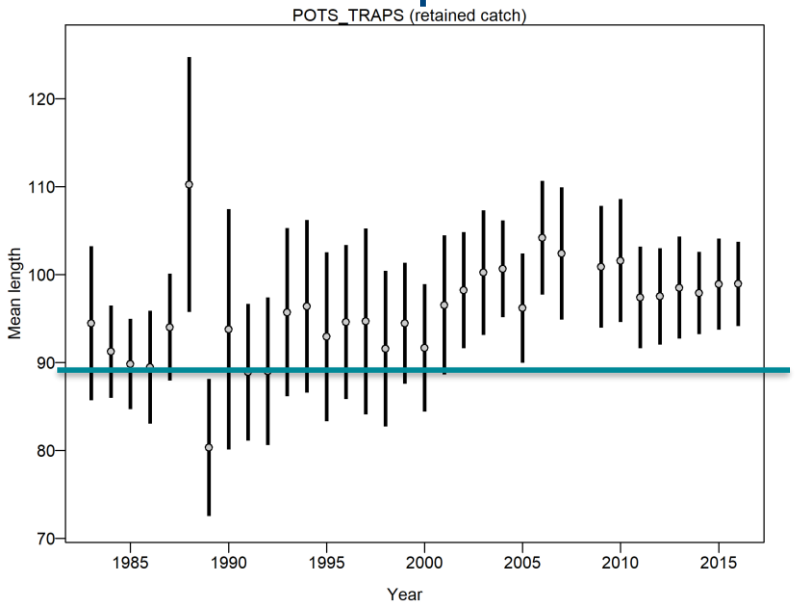
Mean Length

Note y-axis scales differ

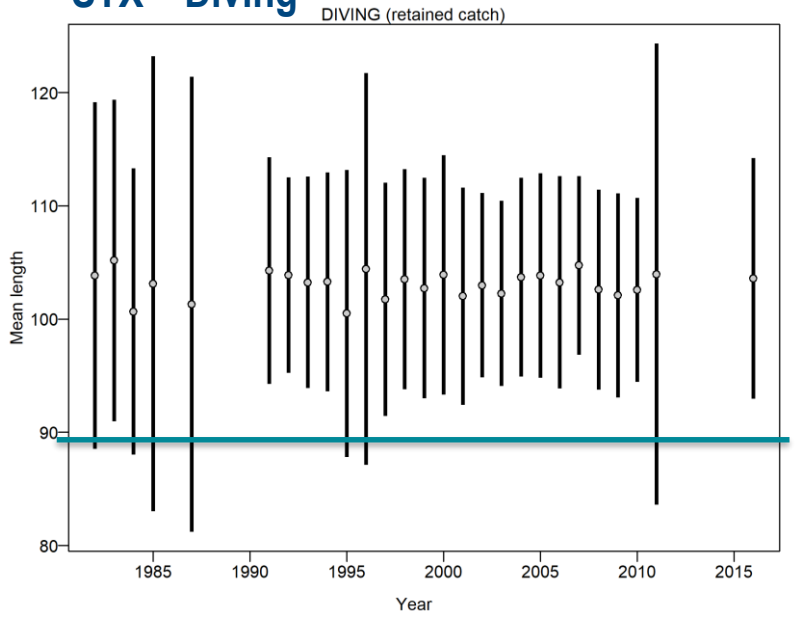
PR – Diving



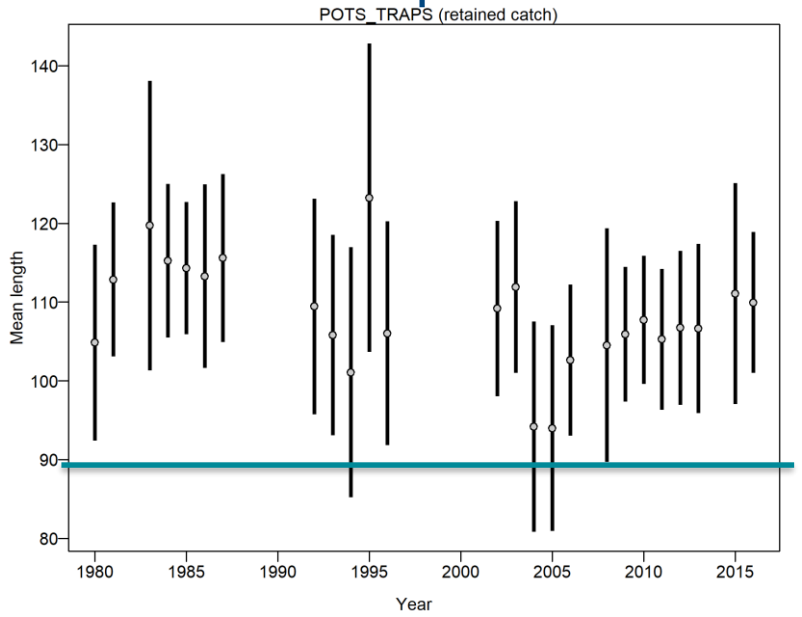
PR – Pots and Traps

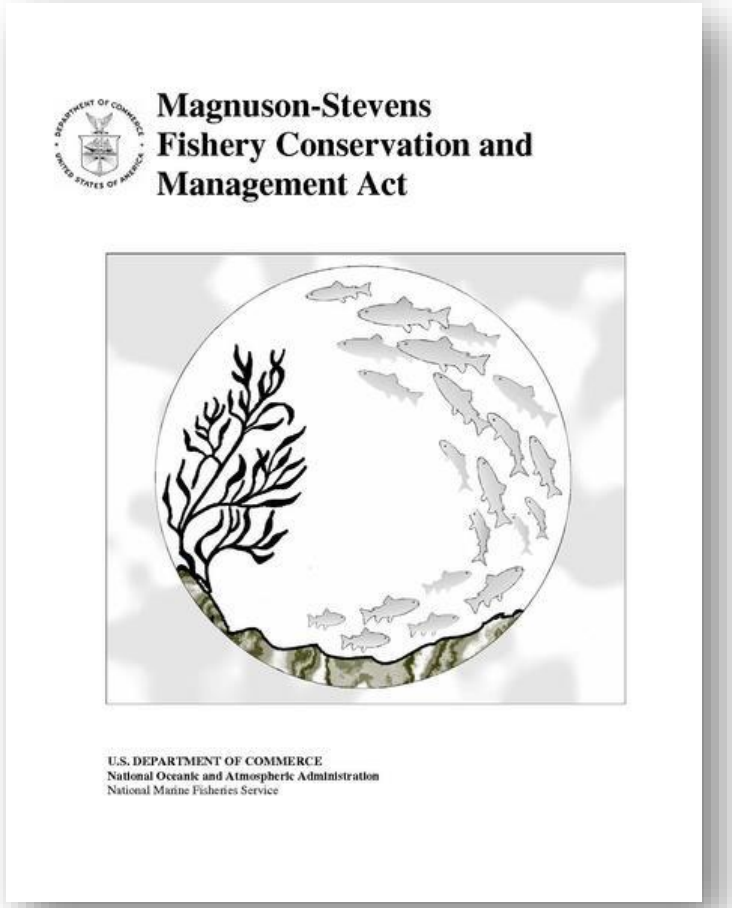


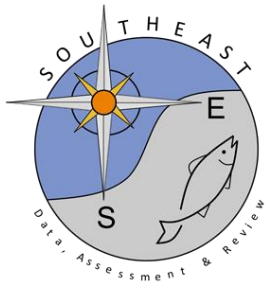
STX – Diving



STX – Pots and Traps




Magnuson-Stevens
Fishery Conservation and
Management Act
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service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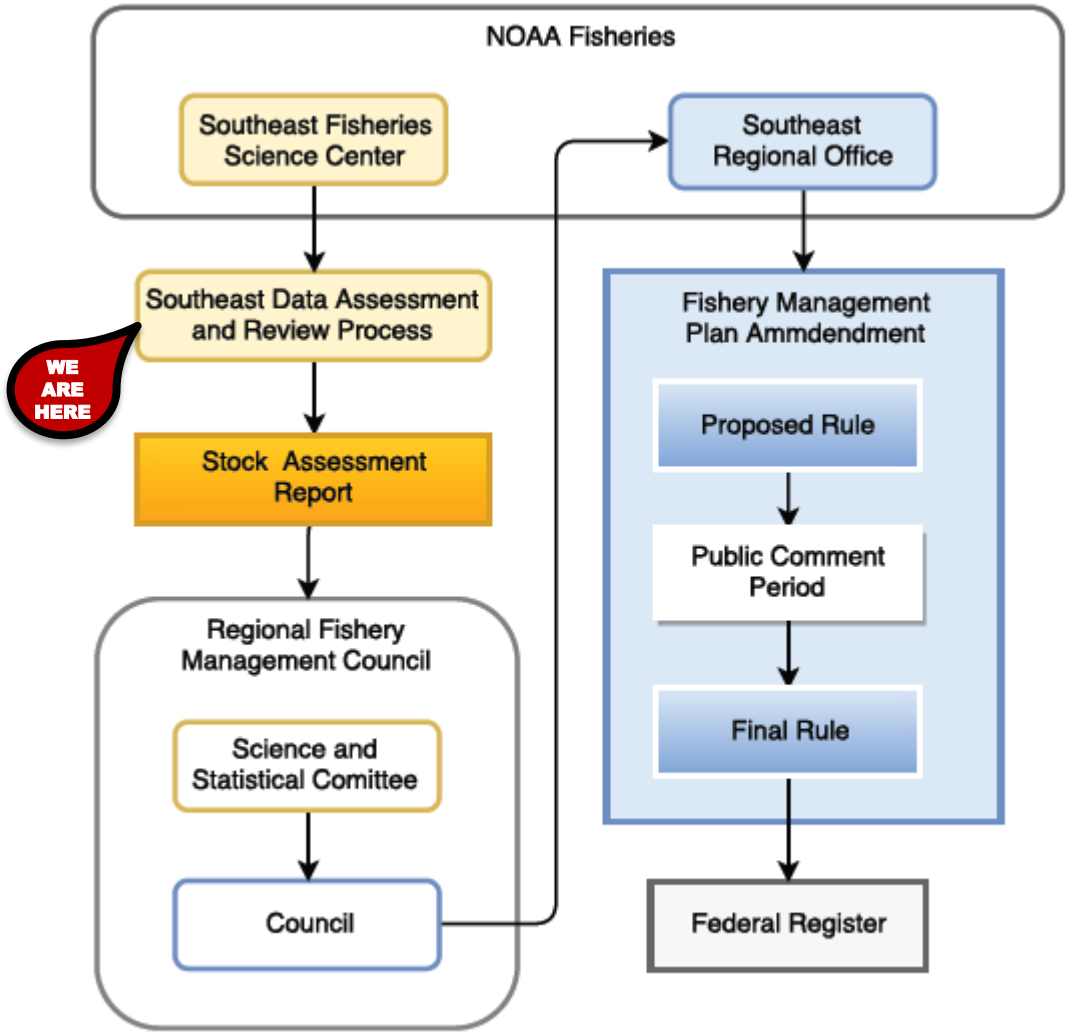
E
S
Data, Assessment & Review


NOAA Fisheries
Southeast Fisheries Science Center
Southeast Regional Office
Southeast Data Assessment and Review Process
WE ARE HERE
Stock Assessment Report
Regional Fishery Management Council
Science and Statistical Comittee
Council
Fishery Management Plan Ammdendment
Proposed Rule
Public Comment Period
Final Rule
Federal Register

SEDAR 57 Milestones

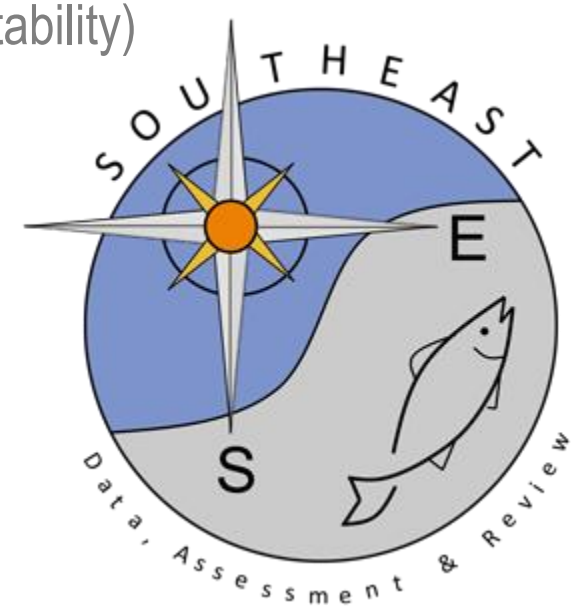
2018

March	Project Schedule Approved
April	Data Scoping Call (Inventory Available Data)
May	Unprocessed Data Due
June	Data Workshop (Evaluate Data Suitability)
July	Post-Data Workshop Webinar
August	Data Report Due
September	Assessment Webinar 1
October	Assessment Webinar 2
November	Assessment Webinar 3

2019

January	Assessment Report Due
July	**Review Workshop**

WE ARE HERE



RW Terms of Reference

1. **Evaluate the data used in the assessment**, addressing the following:
   a. Are data decisions made by the DW and AW sound and robust?
   b. Are data uncertainties acknowledged, reported, and within normal or expected levels?
   c. Are data applied properly within the assessment model?
   d. Are input data series reliable and sufficient to support the assessment approach and findings?
2. **Evaluate the methods used to assess the stock**, taking into account the available data.
   a. Are methods scientifically sound and robust?
   b. Are assessment models configured properly and used consistent with standard practices?
   c. Are the methods appropriate given the available data?
3. **Evaluate the assessment findings** with respect to the following:
   a. Can the results be used to inform management in the U.S. Caribbean (i.e. develop annual catch recommendations)?
   b. Is it likely the stock is overfished? What information helps you reach this conclusion?
   c. Is it likely the stock is undergoing overfishing? What information helps you reach this conclusion?

RW Terms of Reference

4. **Comment on** the degree to which methods used to evaluate **uncertainty** reflect and capture the significant sources of uncertainty in the population, data sources, and assessment methods. Ensure that the implications of uncertainty in technical conclusions are clearly stated.
5. **Consider the research recommendations** provided by the Data and Assessment workshops and make any additional recommendations or prioritizations warranted. Clearly denote research and monitoring that could improve the reliability of, and information provided by future assessments.
6. **Provide guidance on key improvements in data or modeling** approaches which should be considered when scheduling the next assessment.
7. **Provide recommendations** on possible ways to improve the **SEDAR process**.
8. **Prepare a Peer Review Summary summarizing the Panel's overall conclusions and recommendations**.

RW Informal Agenda

- Data Overview
- Methods Overview
- St. Thomas Base Model
- St. John Base Model
- Puerto Rico Base Model

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