

# A Collaborative Research Assessment and Outreach Program for Turtle Excluder Devices (TEDs) within the Longfin Squid Fishery of the Greater Atlantic Region

Cornell Cooperative Extension of Suffolk County

Marine Program

Fisheries Team

Funded by NOAA Bycatch Reduction Engineering Program (BREP)





# Participants

- Bill Reed, Captain F/V Providence
- Jon Knight, Superior Trawl LLC
- Henry Milliken: Supervisory Research Fishery Biologist, NOAA Northeast Fisheries Science Center
- Jeff Gearhart: Branch Chief, NOAA Southeast Fisheries Science Center
- Nicholas Hopkins: Fishery Methods and Equipment Specialist, NOAA Southeast Fisheries Science Center
- Carrie Upite: NOAA Greater Atlantic Regional Fisheries Office (GARFO), Protected Resources Division

# TEDs Background

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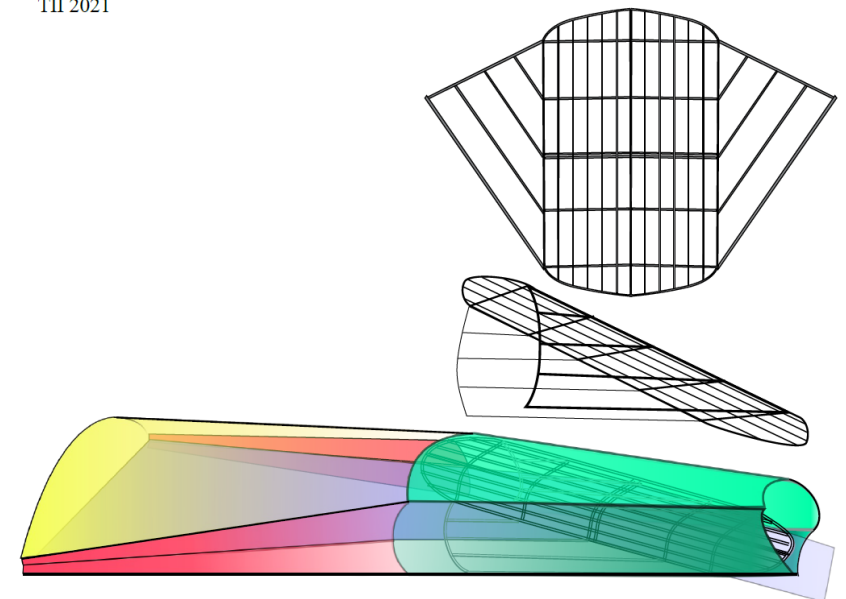
- Turtle Excluder Devices (TED) have been mandated in southern shrimp fisheries since 1987
- Technology and regulations have been updated over time
- NOAA is considering modifications to regulations, including extending TED line north in summer flounder fishery and TEDs in the longfin squid fishery



# TED Design

- Solid metal or cable grid placed in net at an angle
- Leads to an escape vent at top (top shooter) or bottom (bottom shooter) of the net
- Design challenges
  - Most not designed for use on net reels
  - Cumbersome and introduce safety issues
  - Cable TED promising (TII)

TII 2021



# Project Goals

## Project Goals

- 1) Help resource managers and fishermen work together to sustainably use, protect, maintain, and rebuild marine fisheries.
- 2) Develop and implement a conservation gear technology approach to address sea turtle bycatch in the longfin squid fisheries of the Greater Atlantic Region.

## Objectives

- Compare the bycatch rates of turtles (if any) during fishing activity for each net (experimental and control)
- Compare the catch rates of the target species for each net
- Form a collaborative network of researchers and industry members to fulfill multiple conservation needs and inform management decisions
- Perform outreach and education to promote better fishing practices and use of gear modifications to reduce bycatch



# Outreach

- 1 workshop conducted (Pt Judith, RI and virtual), 1 upcoming (**March 19, 2026**)
- Dock visits (Montauk, Shinnecock, Pt Judith, Cape May)
- Fisherman input survey (51 responses)





## Tale of Two TEDs

TII – SEFSC Design

REED – Fishermen Design

## Developing REED TED

Using survey and workshop feedback, Capt. Bill Reed constructed multiple versions of a TED with the goals of:

- Retaining squid catch
- Reducing cost and complexity to build
- Working well on net reels
- Allow sea turtles to escape





## Research Design

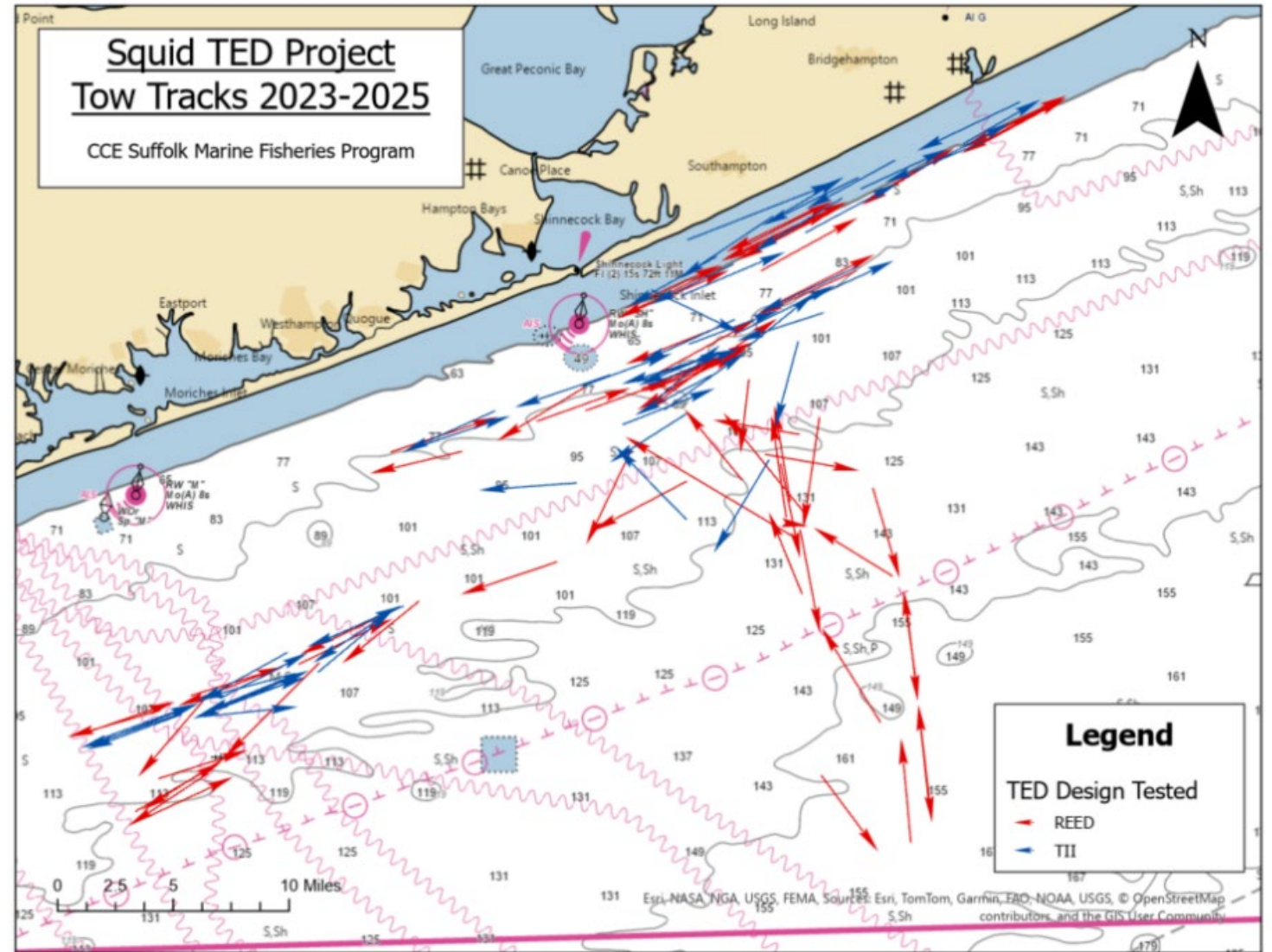
- Paired tows using twin trawl; control and **treatment A (TII) or treatment B (REED)**
- Total weight of all species collected
- Measurements of 100 squid per net
- Measurements of fluke & black sea bass

## At-Sea Research

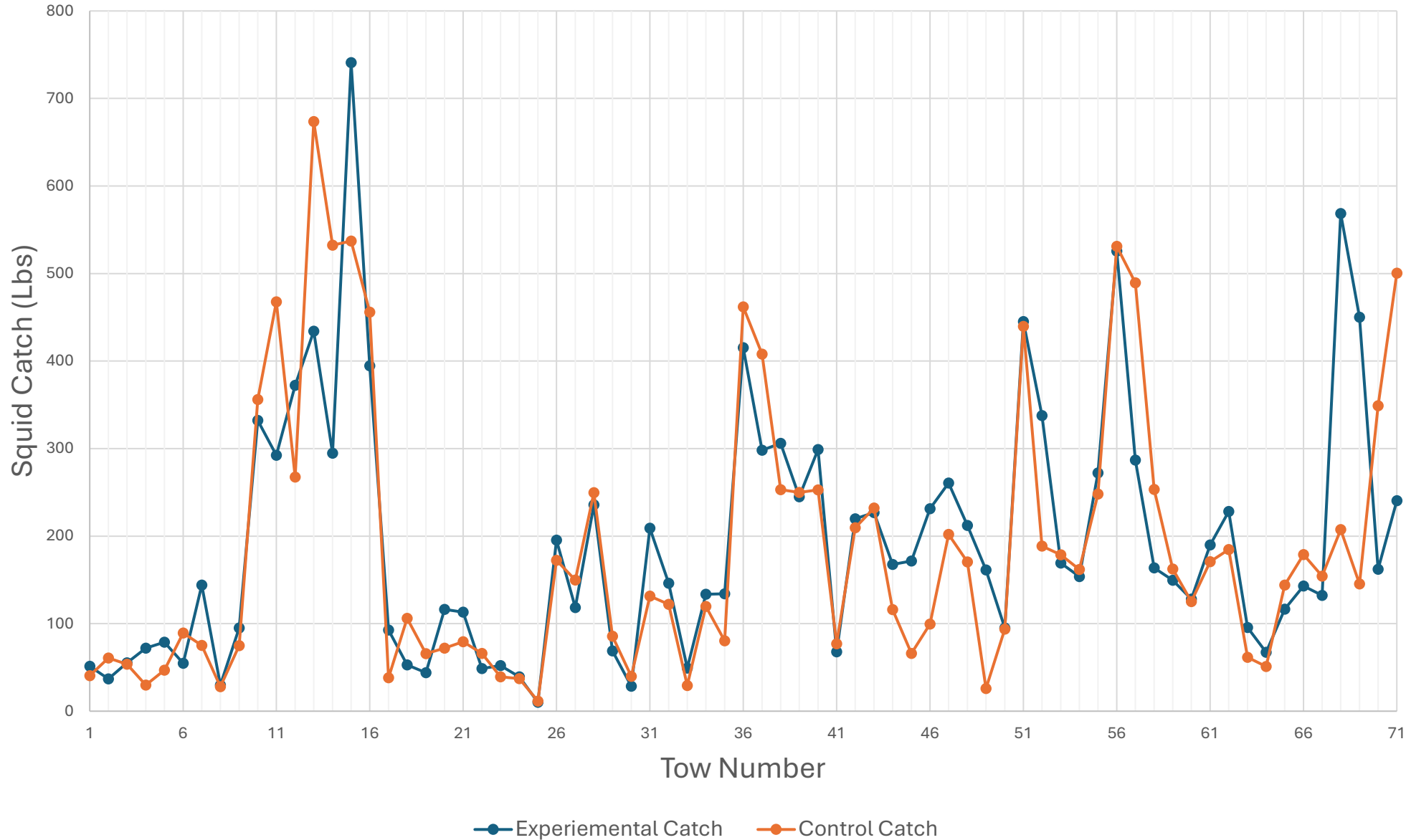
- **16** One-day research trips conducted
- **128** One-hour tows completed
- **47,139** pounds of squid caught
- **25,481** squid measured
- **Zero** Turtles



# Research Area



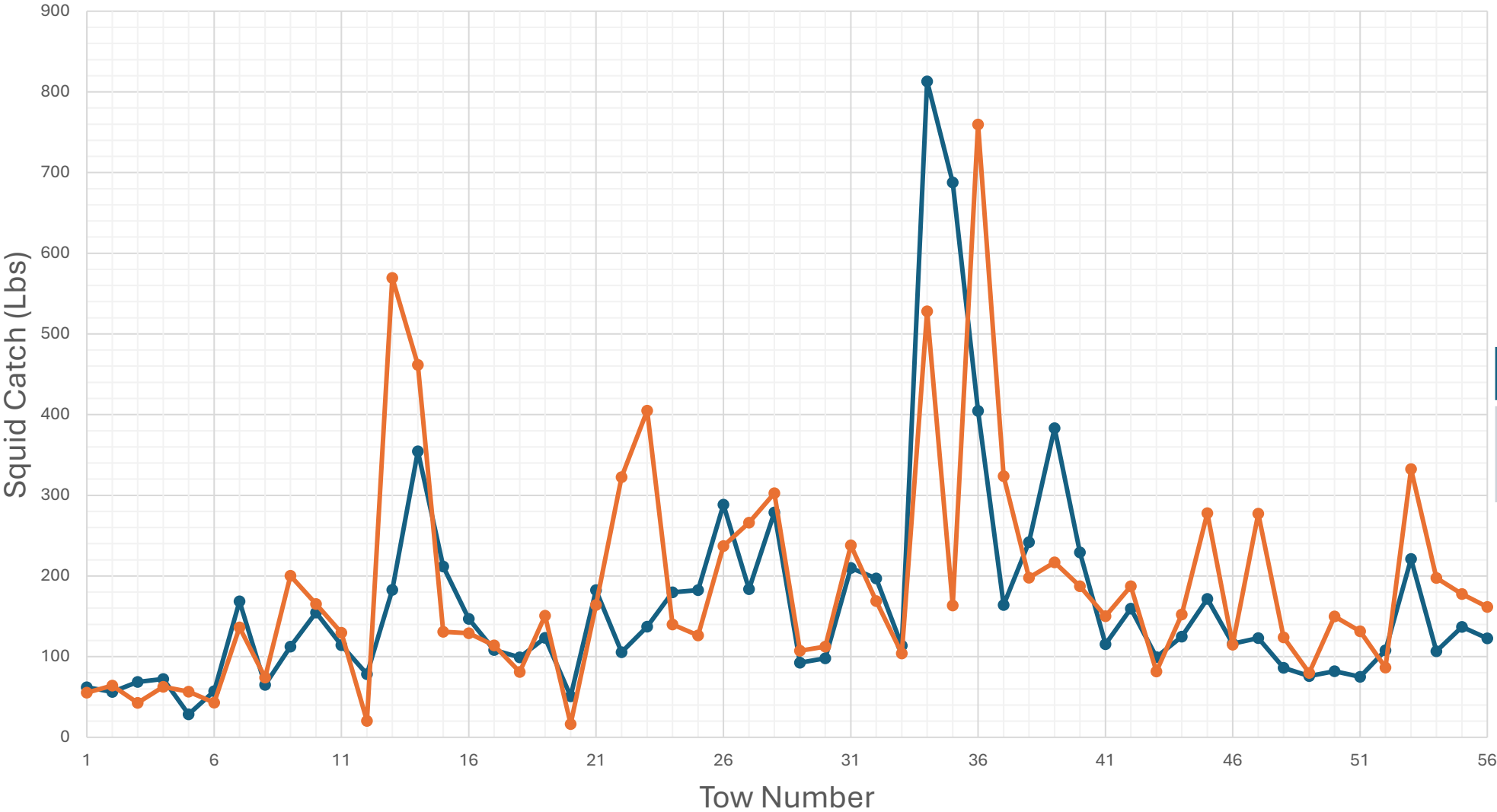
# REED Tow-by-tow Squid Catch Comparison



## Total Catch Weight (lbs)

Experimental	Control
13,770.9	13,329.4

# TII Tow-by-tow Squid Catch Comparison



## Total Catch Weight (lbs)

Experimental	Control
9,411.6	10,455.5

● Experimental Catch    
 ● Control Catch

# Results

## Catch Totals (Pounds)

Species	TII (n=55)		REED (n=69)	
	Control	Experimental	Control	Experimental
Longfin squid	10,435.1	9,333.3	13,274.2	13,560.4
Summer flounder	352.4	121.7	468.4	356.6
Black sea bass	658.3	108.7	629.9	431.8
Dogfish Combined	1,475.4	358.6	17,238.1	12,241.7
Skate Combined	3,162.5	1,112.9	3,216.3	2,664.1

# Results

## Catch Difference (Control – Experimental)

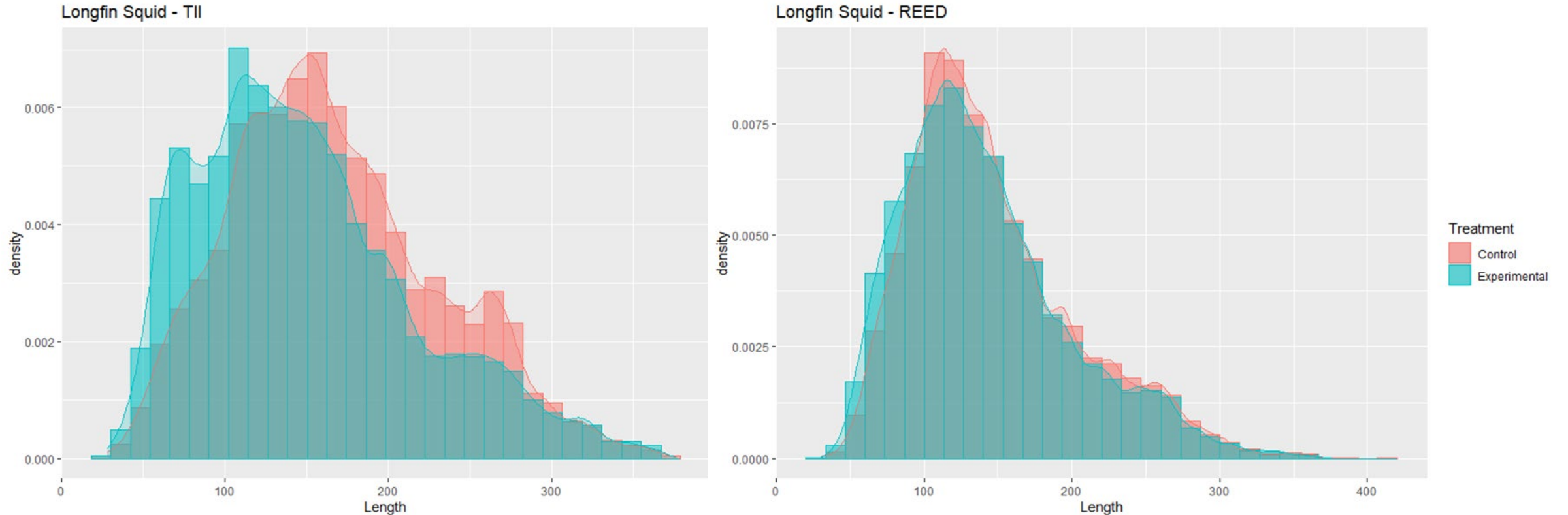
Species	TII		REED	
	Median Percent Reduction	Wilcoxon p-value	Median Percent Reduction	Wilcoxon p-value
Longfin squid	6.9%	0.11	-1.4%	0.38
Summer flounder	95.0%	<b>&lt; 0.001</b>	0.0%	0.48
Black sea bass	26.7%	<b>0.002</b>	0.0%	0.80
Dogfish Combined	83.8%	<b>&lt; 0.001</b>	33.1%	<b>&lt; 0.001</b>
Skate Combined	21.2%	<b>0.04</b>	-8.2%	0.44

➤ No significant difference in longfin squid catch – accept null hypothesis

➤ Significant difference in dogfish and skate bycatch – additional benefits of using a TED

# Results

## Length Frequency Analysis



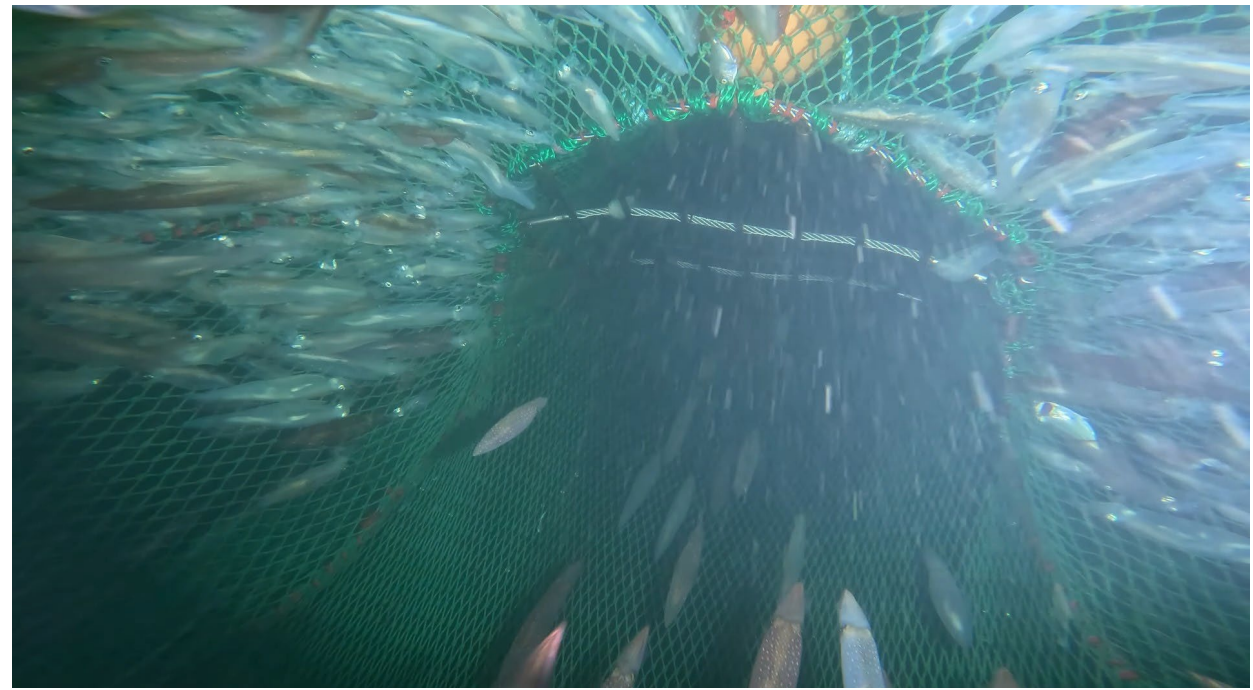
	Mean of Control (mm)	Mean of Experimental (mm)	W	p-Value
Longfin Squid TII	167.6	149.0	1.5e+9	< 0.001
Longfin Squid REED	146.2	141.6	3.2e+9	< 0.001

# Conclusions

- Target catch **not reduced by 15% or more**
- Longfin squid length frequency slightly reduced
  - Issues with TII "ballooning"
- Bycatch reduction benefits/challenges
  - High utility in areas with significant dogfish bycatch
  - Loss of some commercially valuable species

## Next Steps

- Future Research Needs
  - Further test mixed species catch retention
  - Test in offshore fishery
  - Test in Fluke fishery
  - Turtle Testing/certification for REED TED



Any  
Questions?



# Video 1: Squid interaction with TII TED



# Video 2: Striped Bass interaction with REED TED

