Development and Evaluation of the Northeast Modified TED for the Mid-Atlantic and Southern New England Summer Flounder Trawl Fisheries

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Presentation Outline

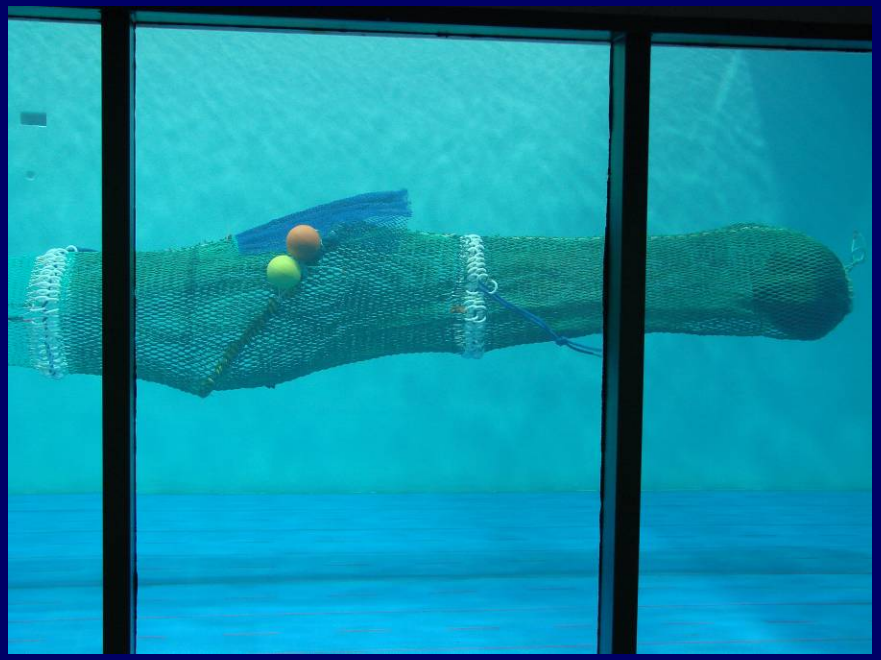
- Development of the Northeast Modified TED and Testing in Newfoundland Flume Tank
- Results of small turtle test in Panama City, FL
- Field Testing of the TED off the Delmarva and south shore of Long Island
  - Results
  - Conclusions
- Funding acknowledgement

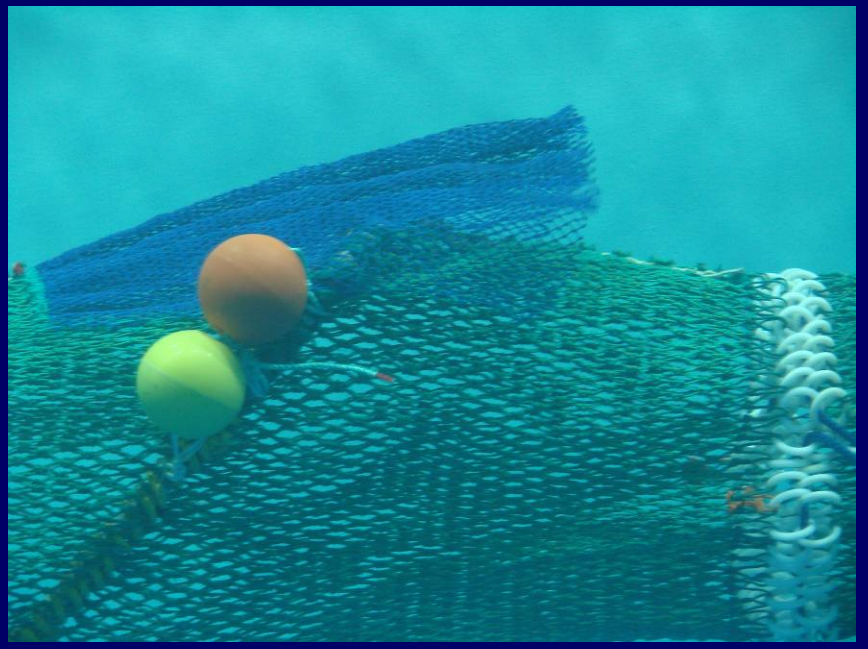
2008 Flume Tank Investigation

- Objectives:
  - Investigate the performance of a modified TED that is larger, flexible, and installed at 30 degrees, and evaluate the dynamic performance of TEDs in response to current speed and clogging
- Facility: The Marine Institute, Memorial University, St. John's, Newfoundland
- Procedures: use dye and photography and video to document TED performance

2008 Flume Tank Investigation

- Flounder TED field tested in 2007
- Note the elevated cover flap with water escaping



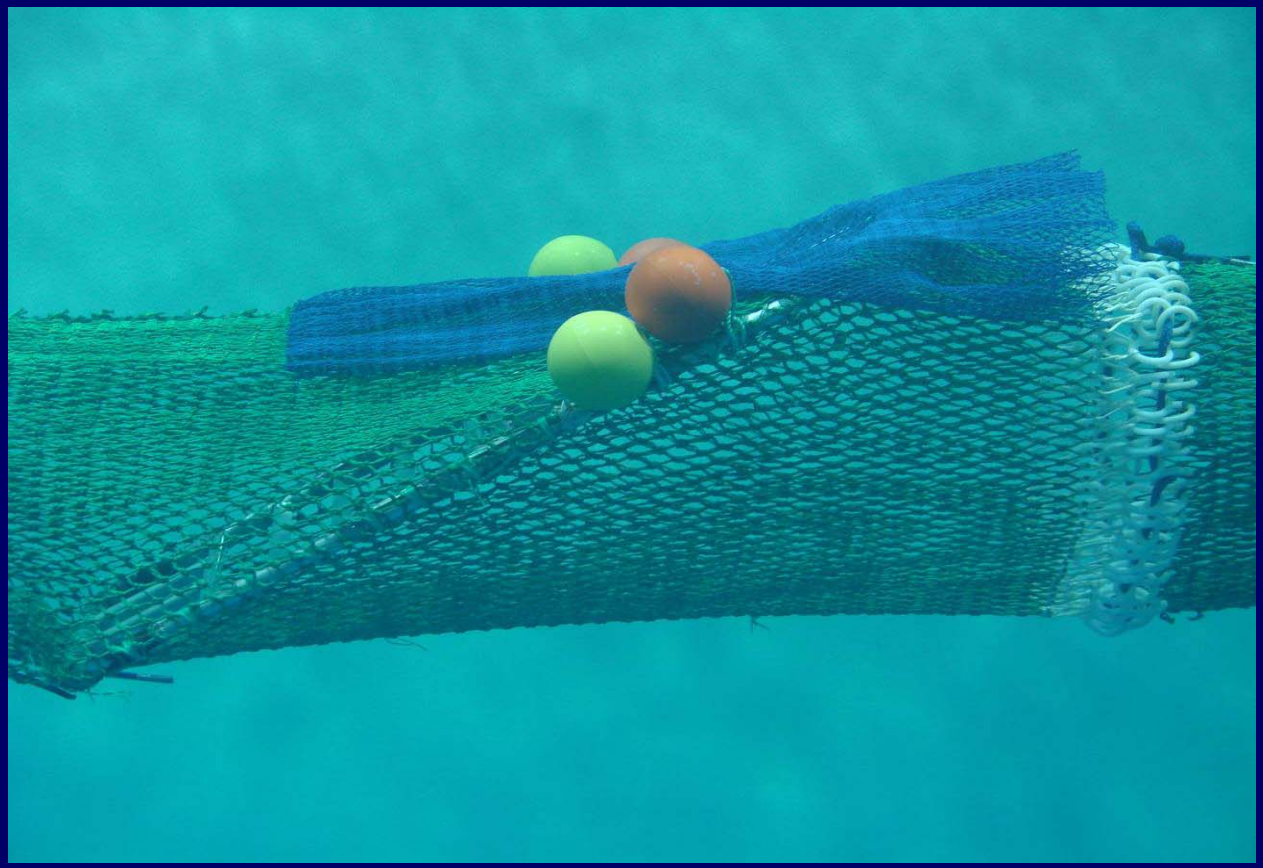


2008 Flume Tank Investigation

- NE modified TED

2008 Flume Tank Investigation

- NE modified TED
- Note the lower angle of attack and closed cover



2008 Flume Tank Investigation

- Conclusions:
  - – Blockage on the TED and weight in the codend affect the angle of attack of the TED, and result in a non-horizontal extension section.
  - – An elevated cover flap indicates water flowing out of the opening in the top of the TED extension section, due to the escape of water through the extension section opening

2008 Small Turtle Test of NE Modified TED

- Objective: to evaluate the turtle exclusion ability of the NE modified TED.
- Criteria: must pass 24 or 25 small turtles introduced into the mouth of the trawl
- Study Area: tests are conducted off Panama City, Florida by NMFS SE gear group
- Results: TED with 5 inch vertical bar spacing failed, TED with 4 inch vertical bar spacing passed

2008 Small Turtle Test of NE Modified TED

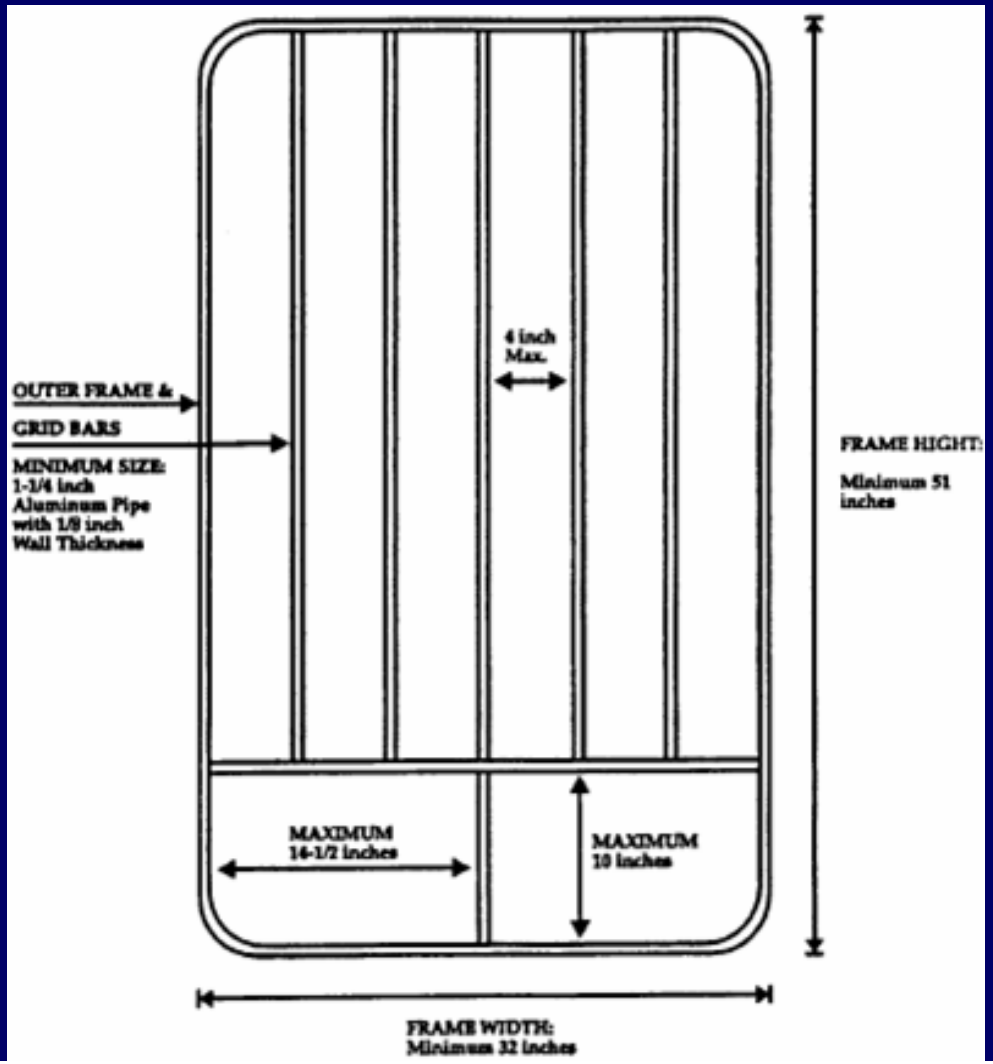
- Conclusions:
  - –The NE modified TED behaved as expected in the tests. The TED maintained the designed angle of attack, and the extension section was parallel to the seabed.
  - –The bar spacing is a critical factor determining the success of passing or failing the small turtle test due to the small size of the farm raised turtles used in the test

2009 Evaluation of Catch Efficiency of NE Modified TED: Experimental Design

- Two vessels, FV Darana R and FV Excalibur
- Two areas, south of LI and off Delmarva
- ABBA series on each vessel
- TED comparison NMFS TED evaluated in 2007 vs. NE modified TED
- 20 pairs on each vessel

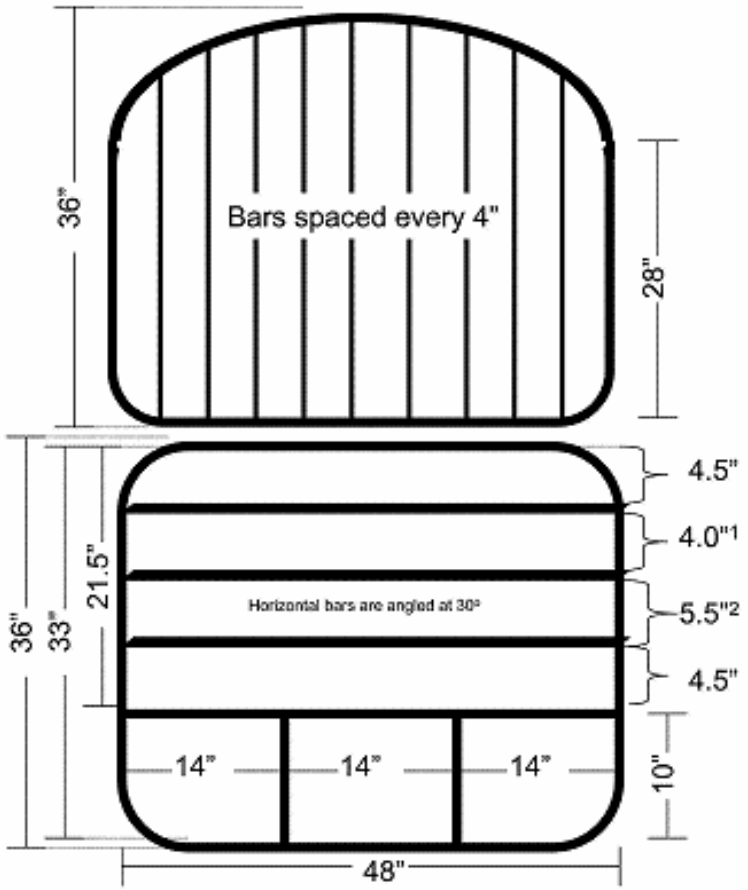
2009 Evaluation of Catch Efficiency of NE Modified TED

- Standard NMFS certified TED tested in 2007, and now compared to the NE modified TED



2009 Evaluation of Catch Efficiency of NE Modified TED

- Design of the NE modifed TED

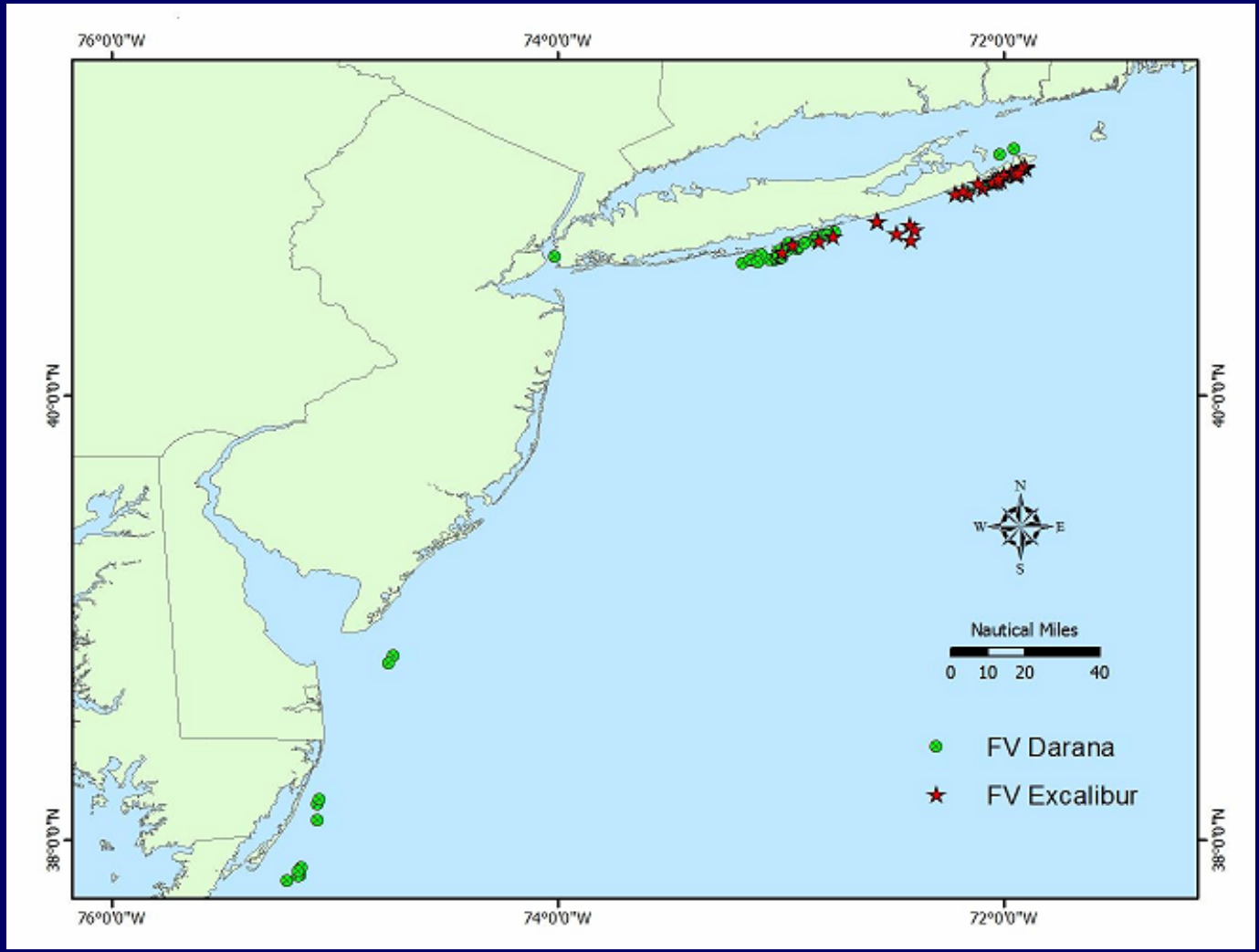


All pipe must be 1.6" O.D.; horizontal flat bars shall be a minimum of 1.5" x 0.375"; vertical flat bars shall be a minimum of 1.25" x 0.375"

[1] – Space between trailing edge of one bar and the leading edge of the adjacent bar is 4"

[2] – Space between leading edge of one bar and the leading edge of the adjacent bar is 5.5"

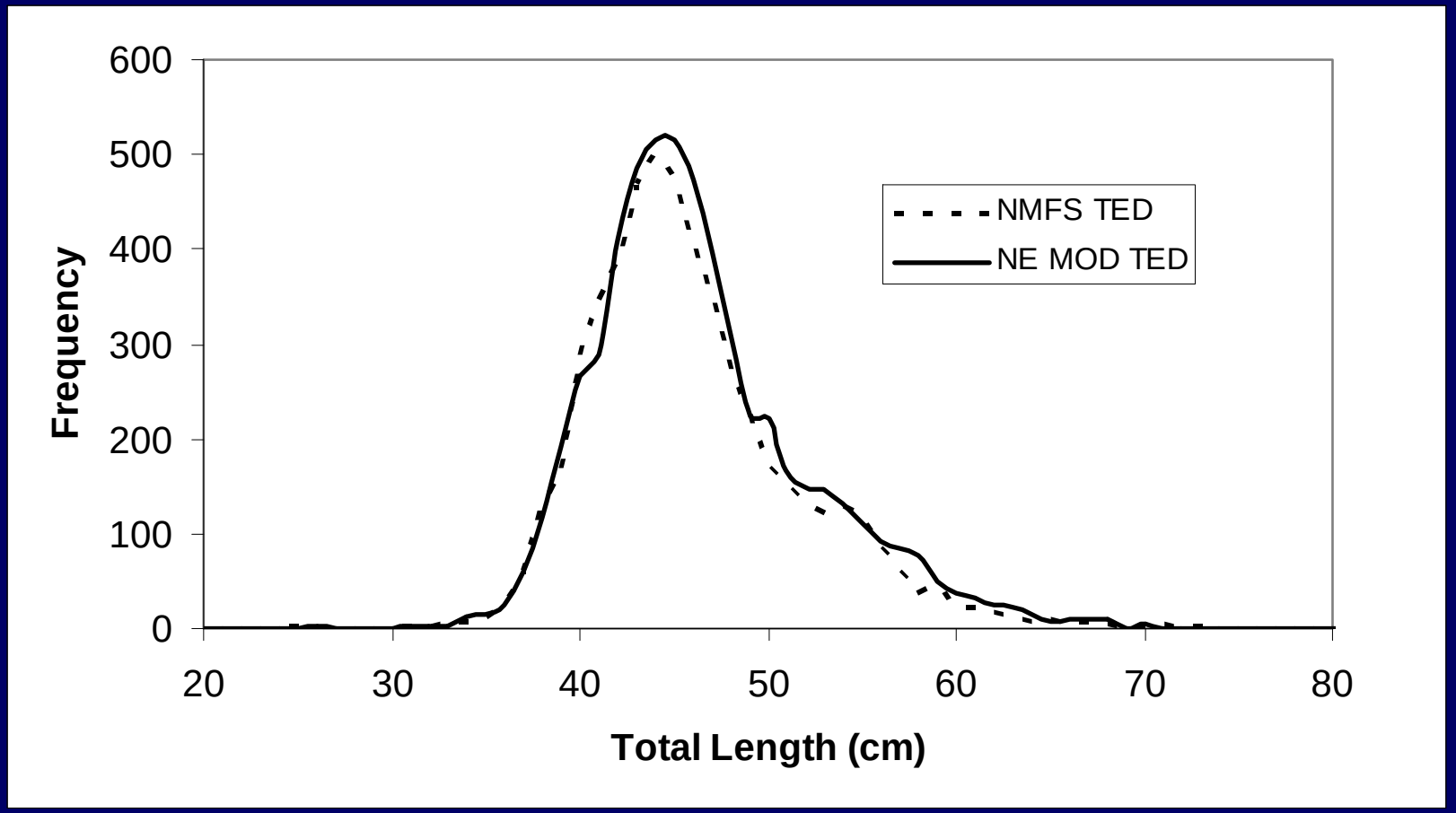
2009 Evaluation of Catch Efficiency of NE Modified TED: Tow Locations



2009 Evaluation of Catch Efficiency of NE Modified TED: Results

Catch	NMFS TED Mean CPT	MOD TED Mean CPT	Ratio MOD/NMFS	Sample size	T-test p value
total catch	1116	1182	1.06	42	0.272
summer flounder	131	147	1.12	42	0.210
total non-target	983	1035	1.05	42	0.363
skate complex	872	894	1.03	42	0.701
dogfish complex	48	66	1.39	42	0.194

2009 Evaluation of Catch Efficiency of NE Modified TED: Results



2009 Evaluation of Catch Efficiency of NE Modified TED: Results

Clogged NMFS TED

2009 Evaluation of Catch Efficiency of NE Modified TED: Results

NE modified TED on haulback

2009 Evaluation of Catch Efficiency of NE Modified TED: Results

NMFS TED damaged by catch and winding on net reel

2009 Evaluation of Catch Efficiency of NE Modified TED: Results

NE modified TED damaged by catch loading

2009 Evaluation of Catch Efficiency of NE Modified TED: Conclusions

- NE mod TED captured 12% more summer flounder by weight than the NMFS TED that was tested in 2007, but the difference is not significantly different from 0
- No difference in the length frequency distributions of the summer flounder captured
- Both TED designs experienced clogging problems, and sustained damage during the experiments
- Summer flounder trawl fishery in the ocean is a high bycatch fishery, 10% summer flounder

2009 Evaluation of Catch Efficiency of NE Modified TED: Funding

- This project was an excellent example of real cooperative research between the fishing industry, NMFS, and URI scientists.
- Project included BRD concept development, the small turtle testing and certification, and field evaluation of the prototype
- Funding was provided by Southern New England Research Initiative, through the Commercial Fishermen's Research Foundation