Scallop RSA Gear Research

(2016 – Present)

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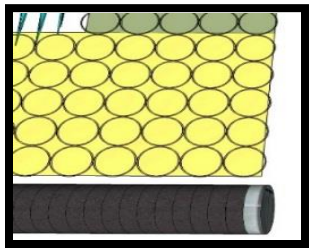
Coonamessett Farm Foundation

What has been done and is currently being done?

5-row apron



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2017 RSA Bycatch

Low-profile dredge

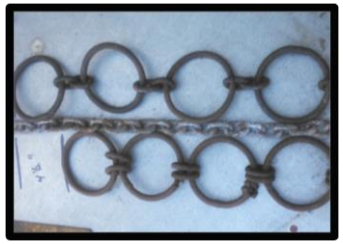
Old (2012 RSA gear)

New (2015 S-K - ONGOING)

2017 RSA modelling and flume

Proposal to BREP – model validation

Extended links



Two-way (2016 RSA LA Gear)

One-way (2016 RSA Compensation Trips)

2017 RSA Gear

Flounder sweep

(2016 RSA LAGC Gear - ONGOING)

Proposal to BREP – test on LA vessels

	Scallops	YTF	WPF
vs 8-row (2012 RSA gear)	10%	33%	46%
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Funded

Proposed

Filled = significant reduction in catch (bushels/numbers)

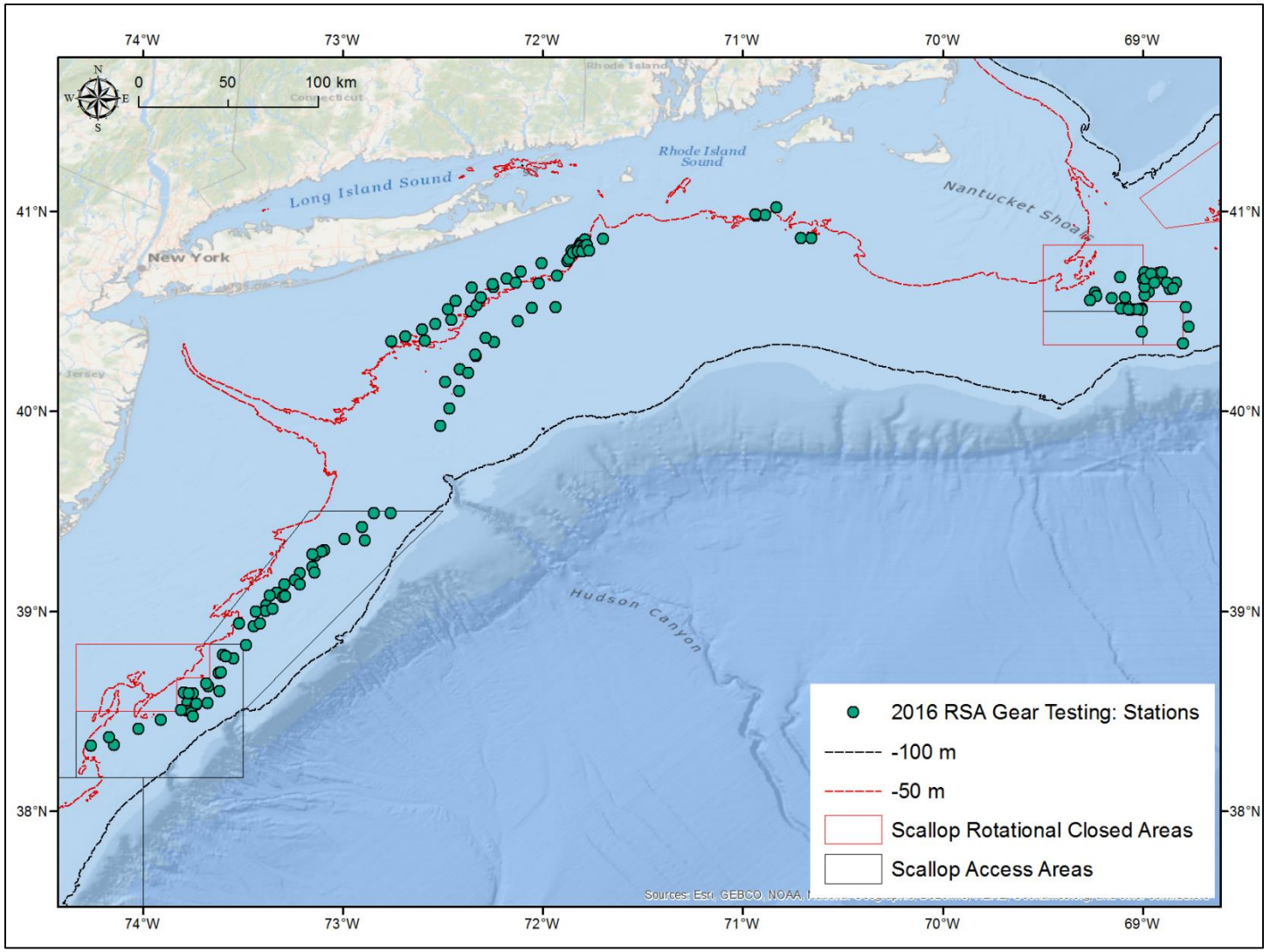
Extended Linkage

2 Way Extended Link Apron

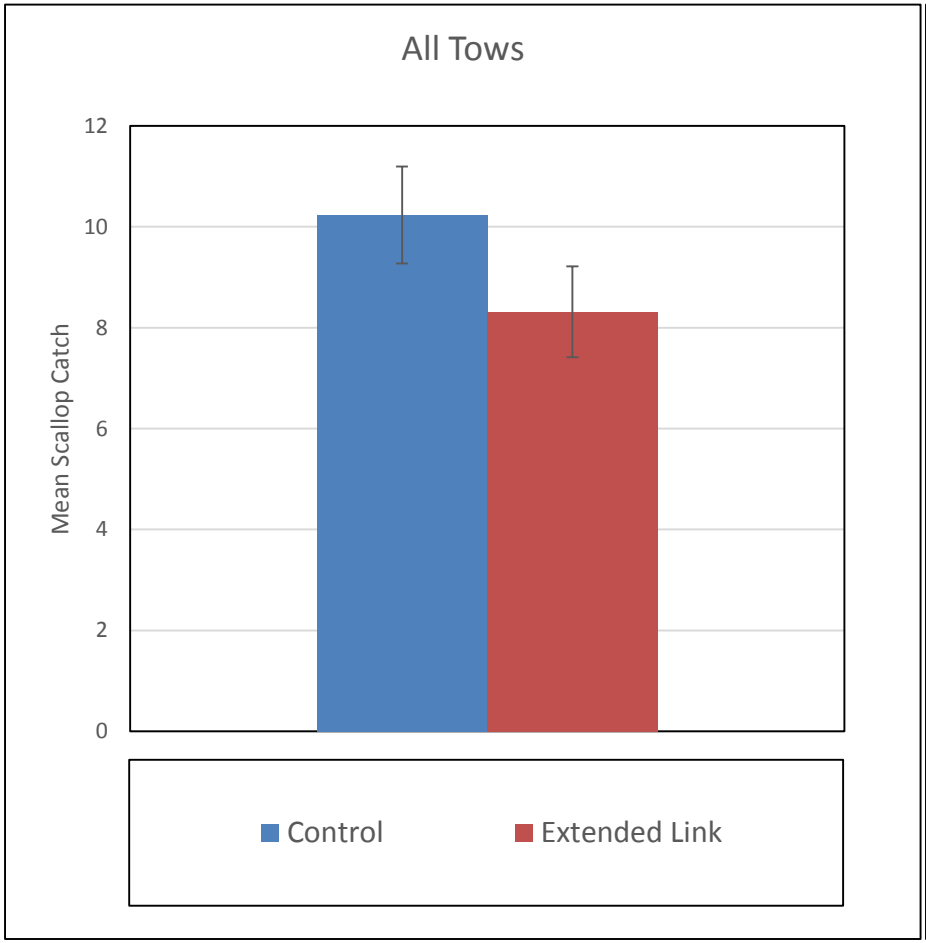
Common Name	CRT	EXT	Proportion	Difference	% difference
BLACKBACK FLOUNDER	18	8	0.31	-10	-38.46%
WINDOWPANE FLOUNDER	157	73	0.32	-84	-36.52%
FOURSPOT FLOUNDER	260	174	0.40	-86	-19.82%
BARNDOOR SKATE	127	85	0.40	-42	-19.81%
MONKFISH	2261	1608	0.42	-653	-16.88%
YELLOWTAIL FLOUNDER	18	13	0.42	-5	-16.13%
UNCLASSIFIED SKATES	13268	9805	0.42	-3463	-15.01%
SUMMER FLOUNDER	4	3	0.43	-1	-14.29%
SEA SCALLOP (EXPANDED)	307313	233517	0.43	-73796	-13.64%
SEA SCALLOP (BUSHELS)	1545	1255	0.45	-290	-10.36%
HADDOCK	25	27	0.52	2	3.85%

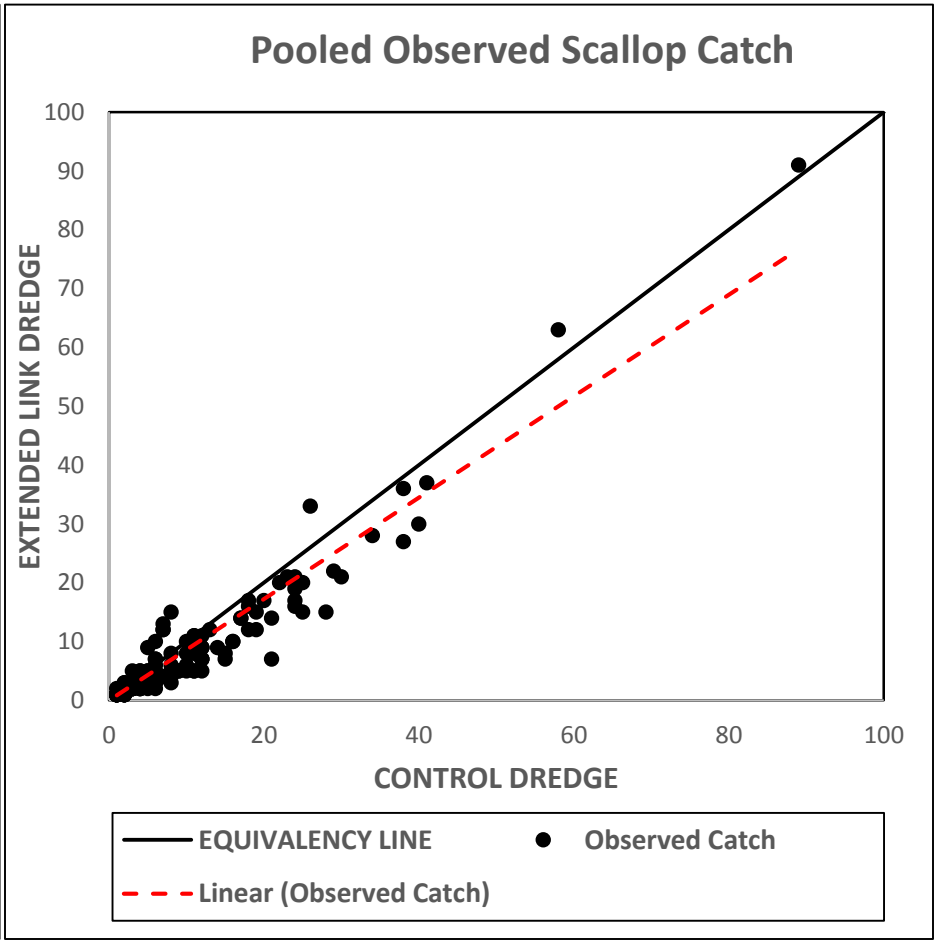
- Five research trips compared the Two-Way Extended Link Apron to a Control dredge
  - 152 tows from June – August
  - MAAA, NLAA and SNE/Long Island
- Two trips utilized a lined survey dredge to assess selectivity
  - Lack of small scallops (< 60 mm)
    - Yochum & DuPaul 2008: 22.5mm – 152.5mm
    - This study: 62.5mm – 142.5mm

Map of Tow Locations

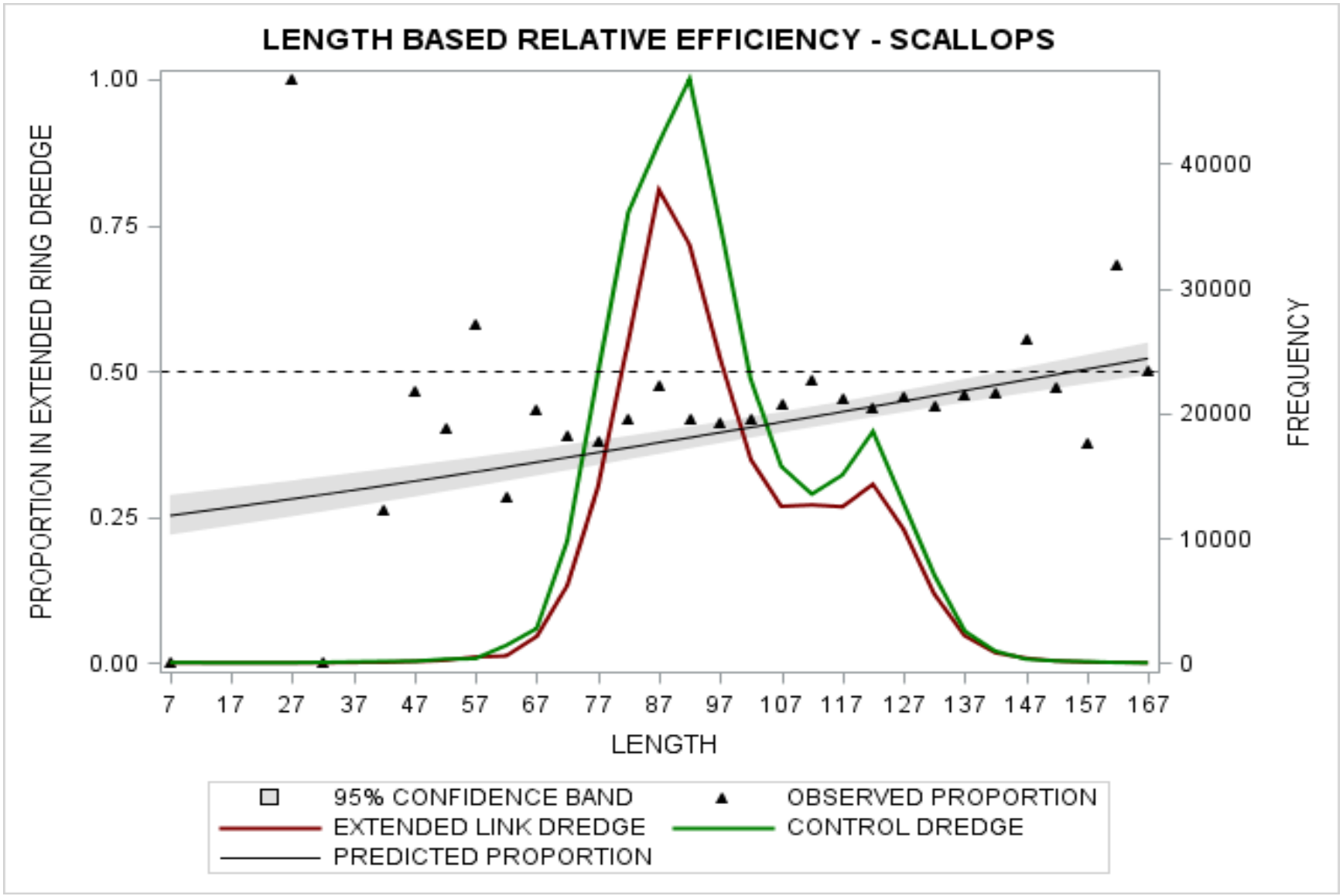


2 Way Extended Link Apron: Scallops





Extended Link Apron: Scallops



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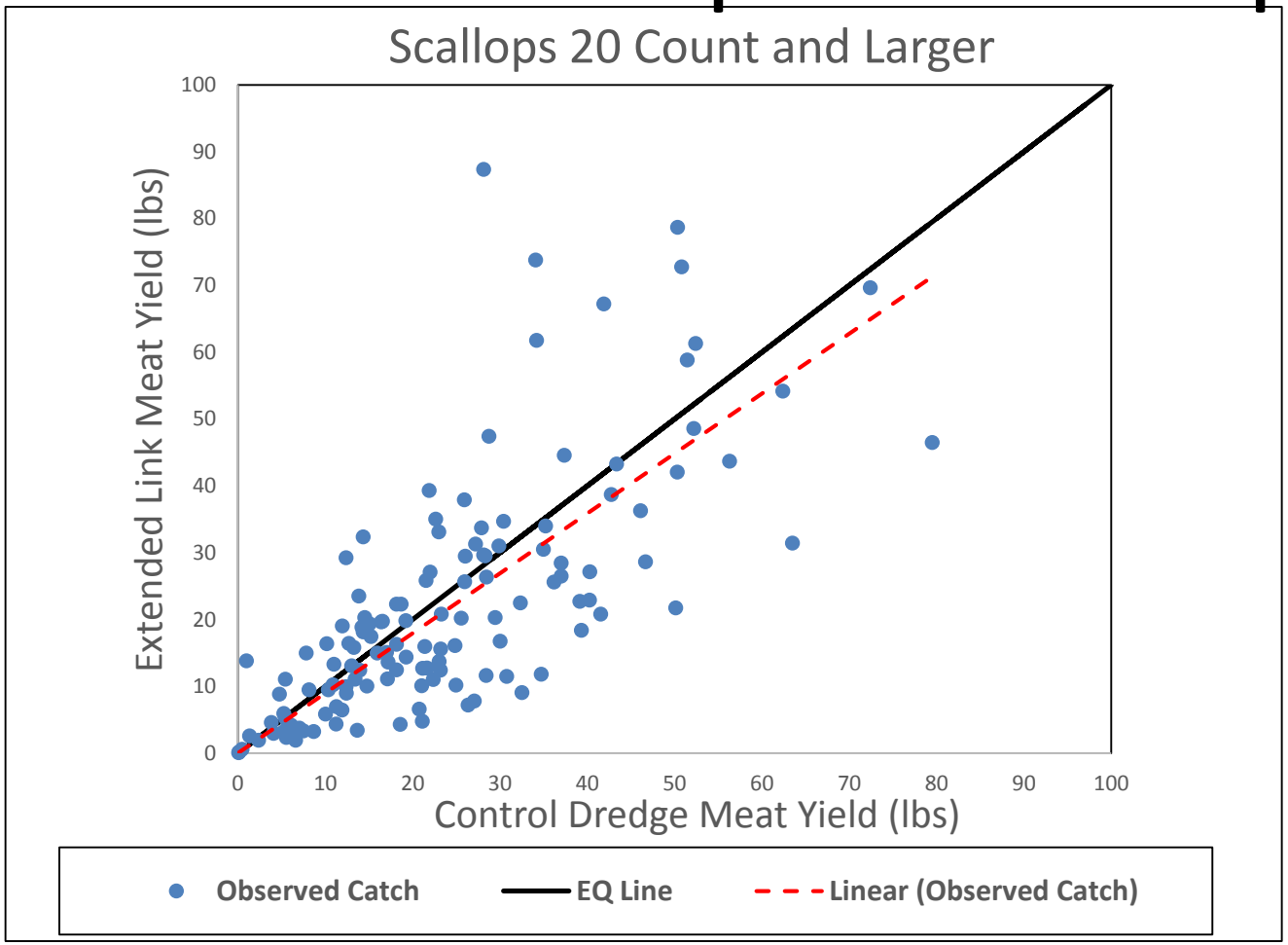
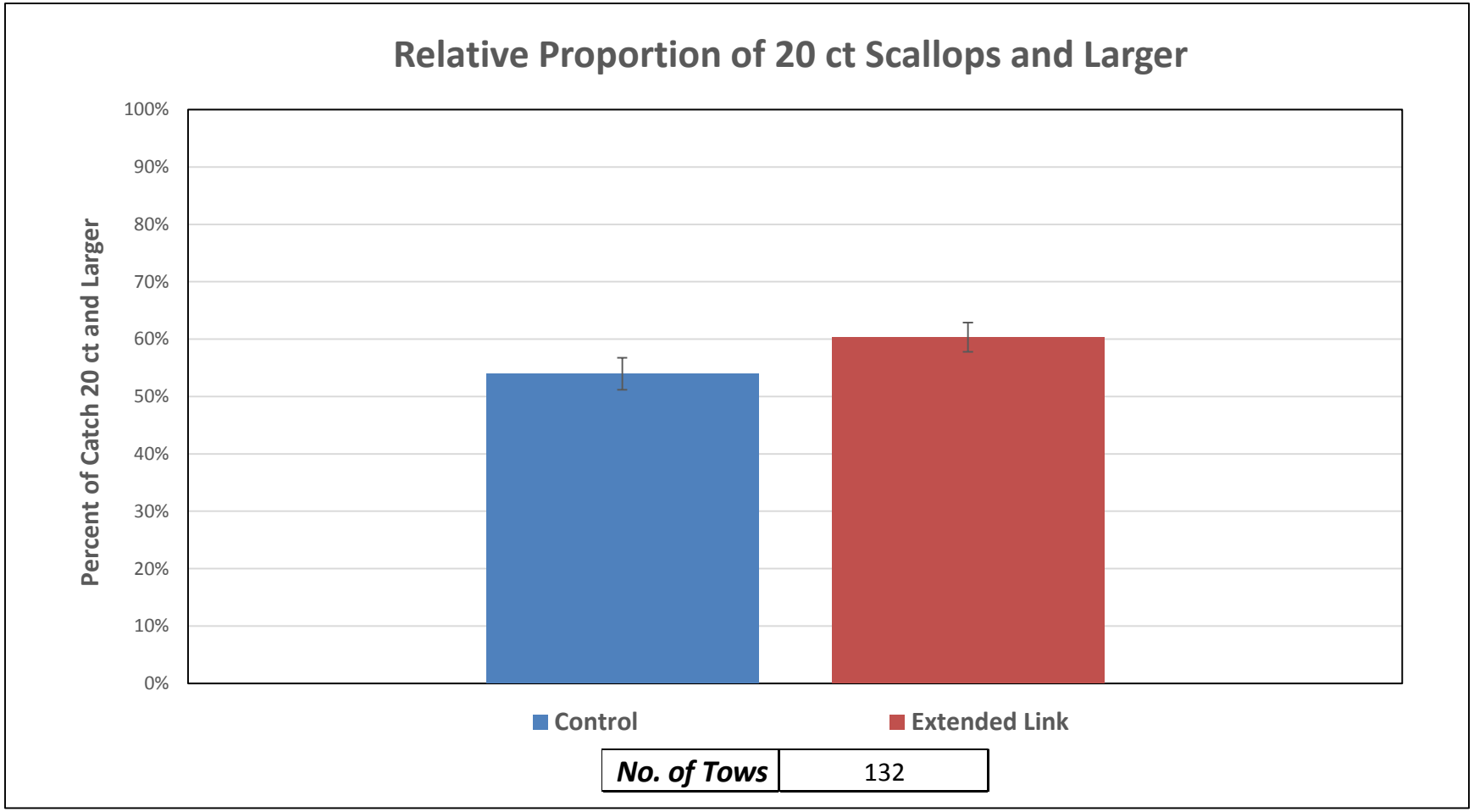


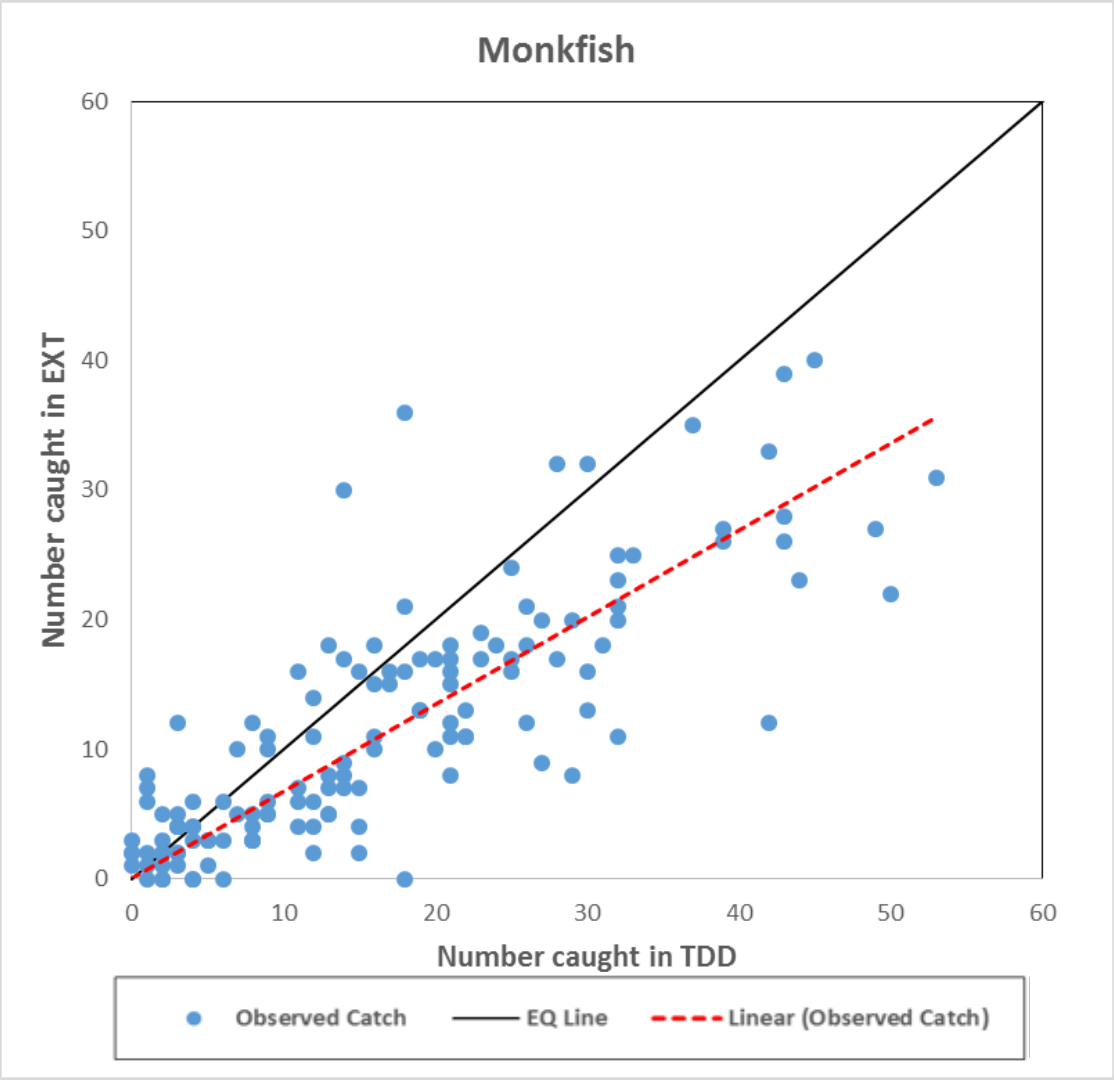
	Control	Extended Link	Difference	% difference
Smaller than 20 ct	49.91 (8.10)	34.20 (7.49)	**-15.706*** **	**-19%*** **
20 ct and Larger	23.52 (1.37)	21.80 (1.56)	**-1.72*** **	**-3.8%*** **

Extended Link Apron: Scallops

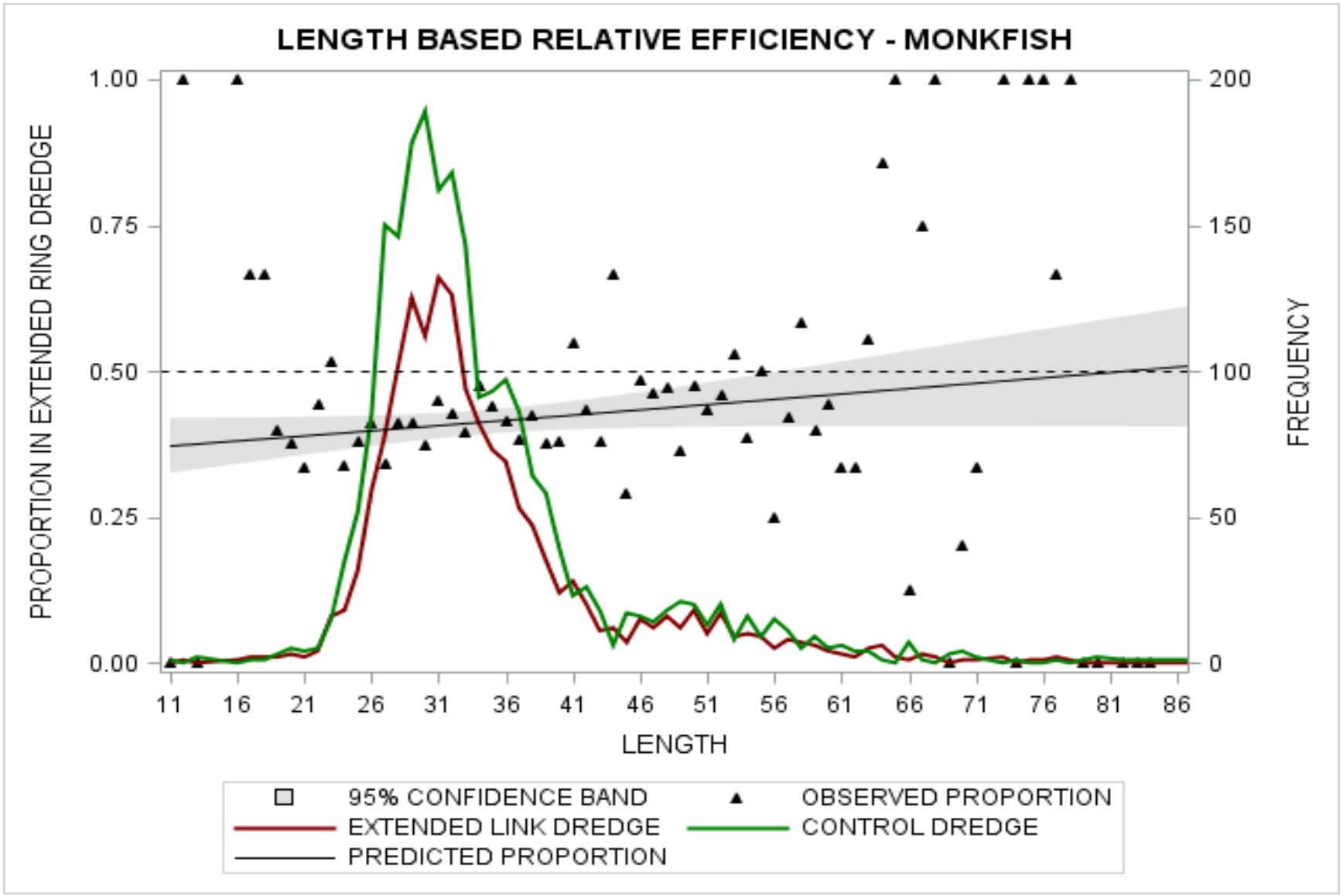


	Control	Extended Link	Difference	% difference
Mean (S.E.)	0.539 (0.027)	0.603 (0.026)	**0.064*** **	**5.785%*** **

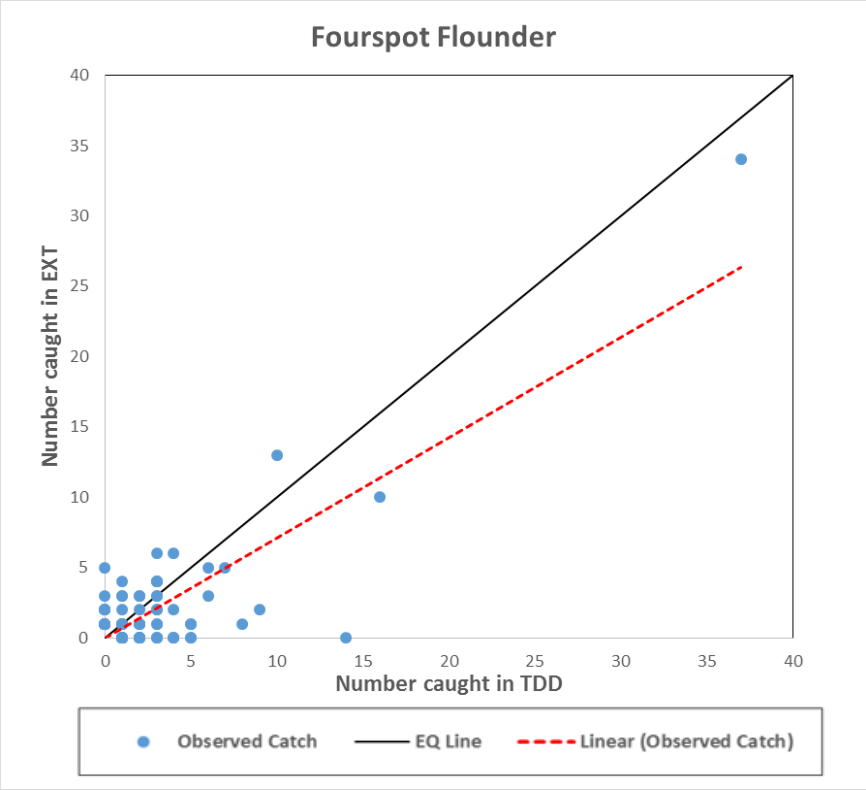
Extended Link Apron: Monkfish

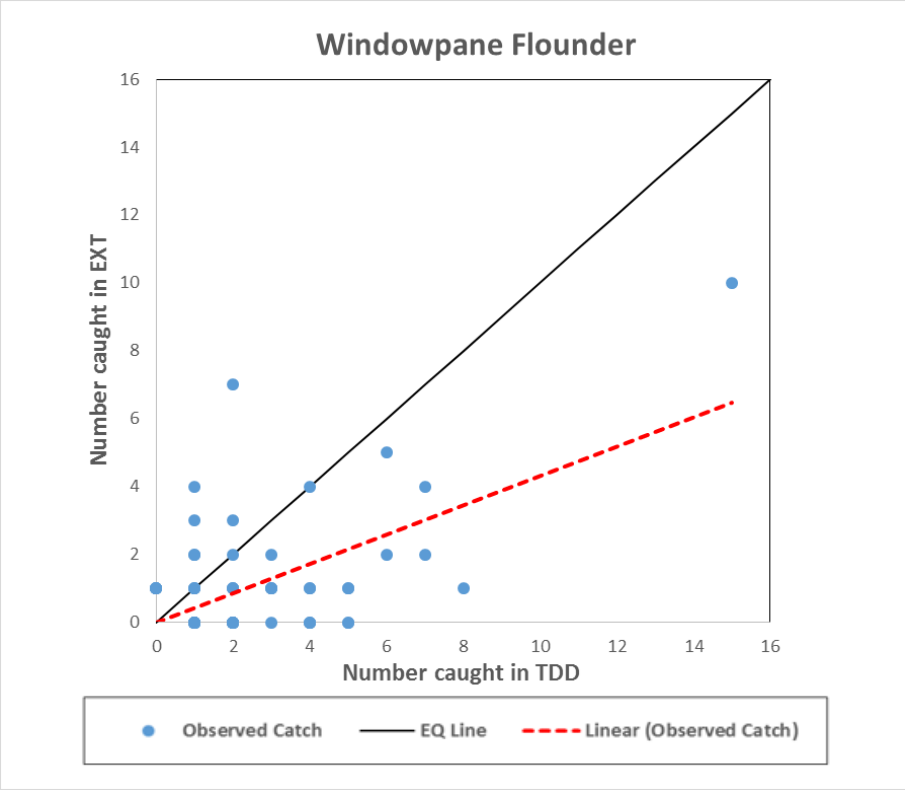


Extended Link Apron: Monkfish



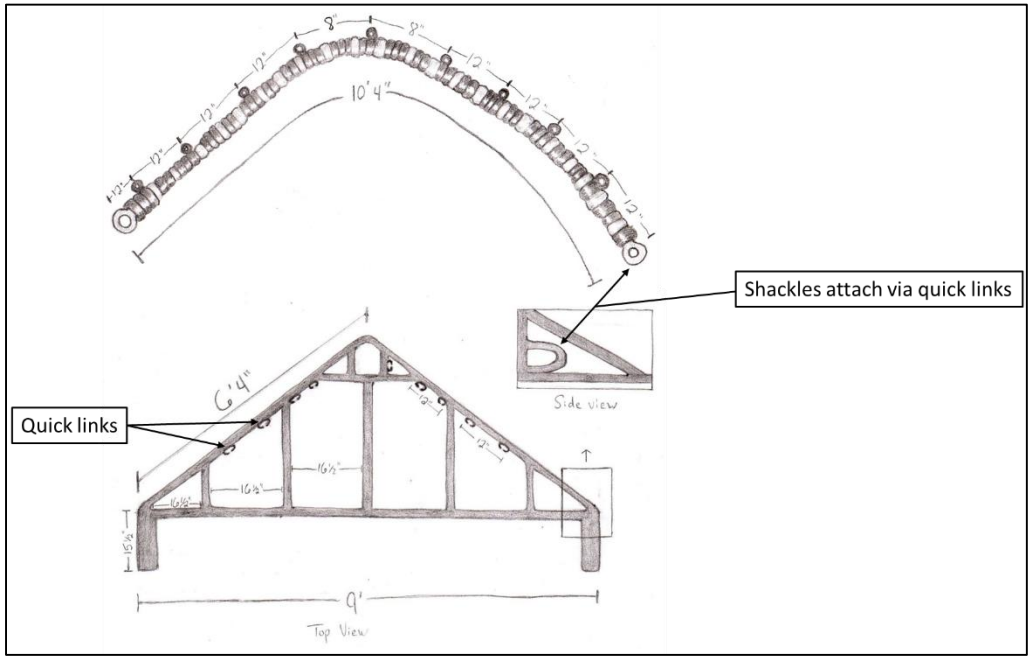
Extended Link Apron: Flatfish





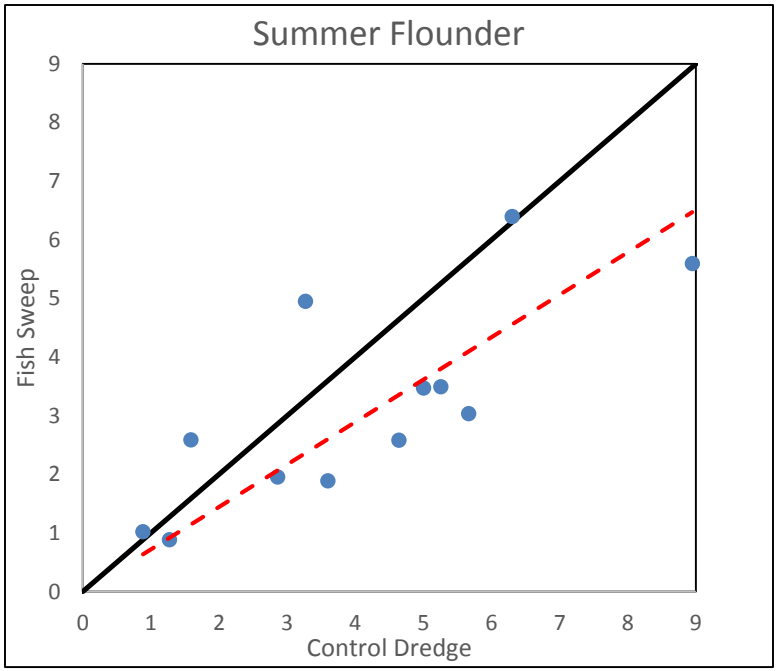
There is a trend for reduced flatfish bycatch but, to attain statistical significance for Windowpane Flounder we would need to conduct over 500 tows (Power Analysis).

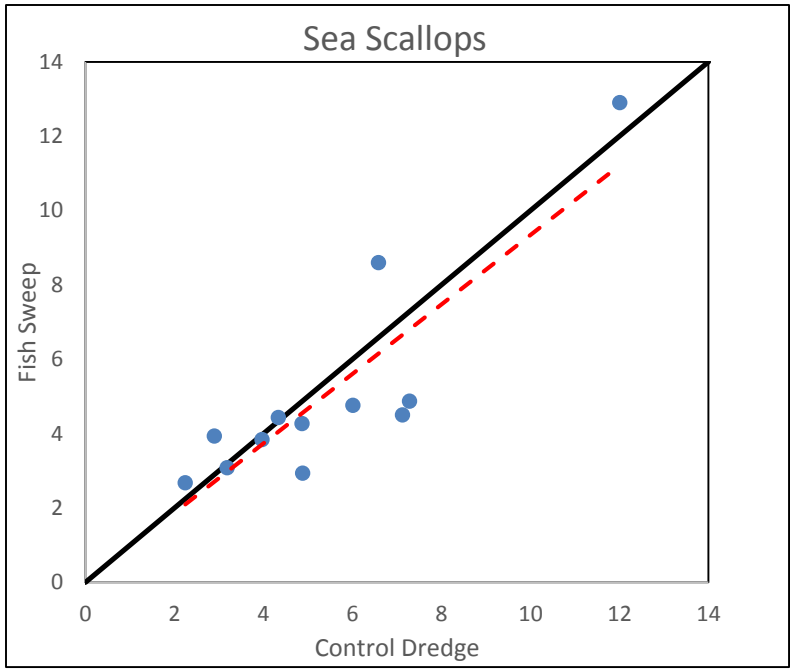
LAGC Flounder Sweep



Number of Tows	
Control Dredge	**38**
Fish Sweep	**37**

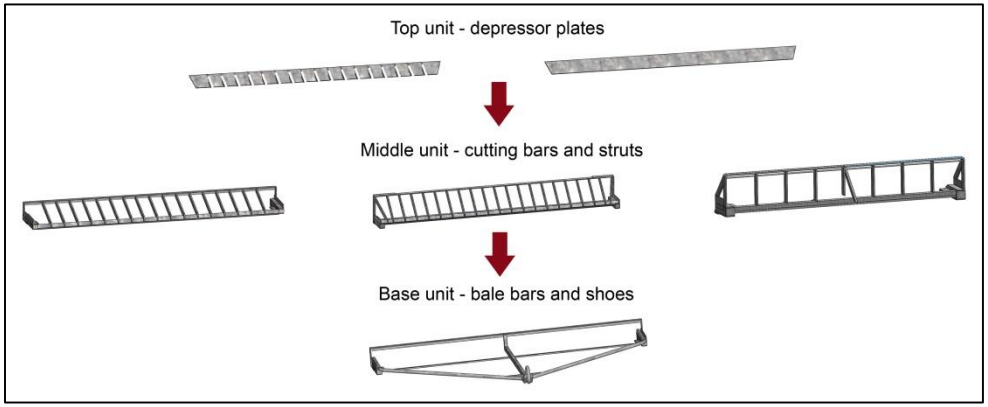
LAGC Flounder Sweep

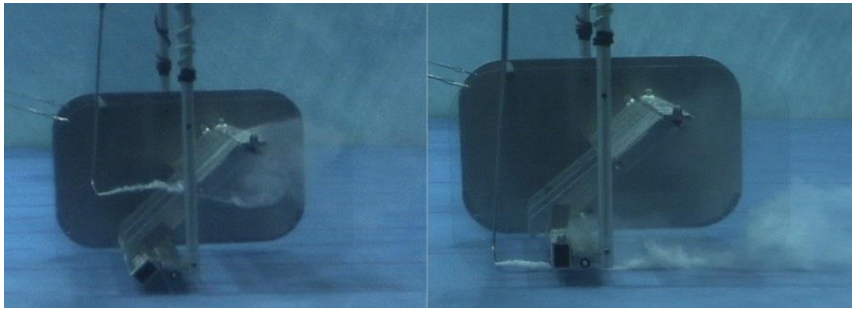


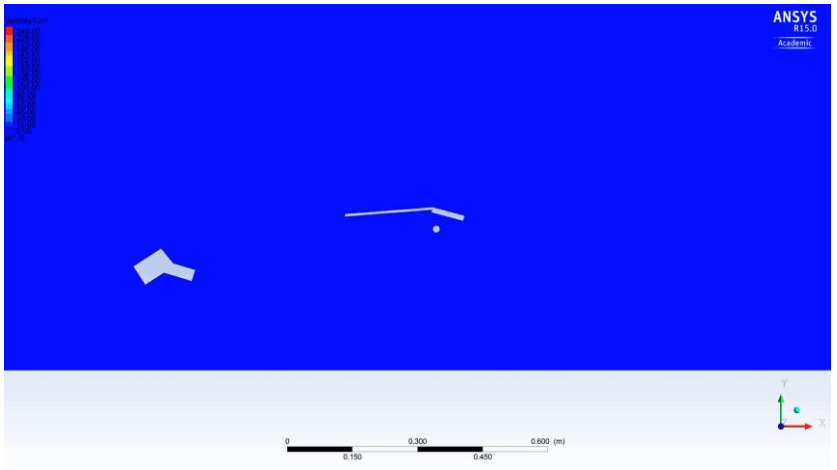


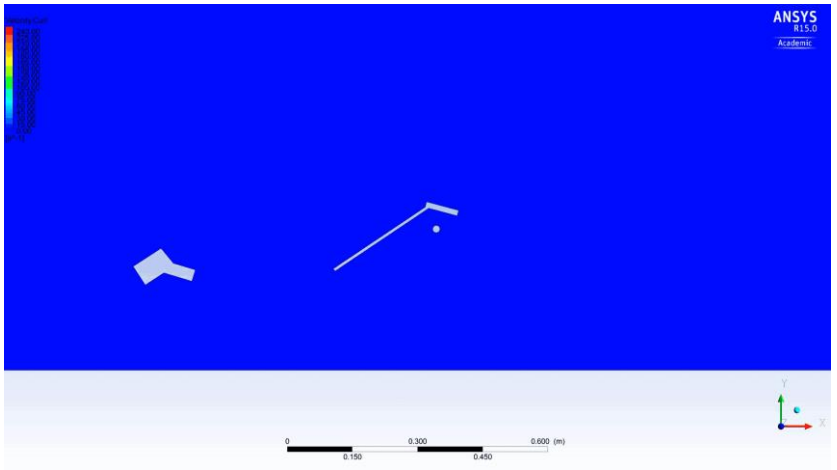
Fish Sweep % reduction	
Sea Scallops	6.55%
Windowpane Flounder	-5.73%
Unclassified Skates	30.35%
Monkfish	-15.59%
Summer Flounder	27.70%

Computational Fluid Dynamics

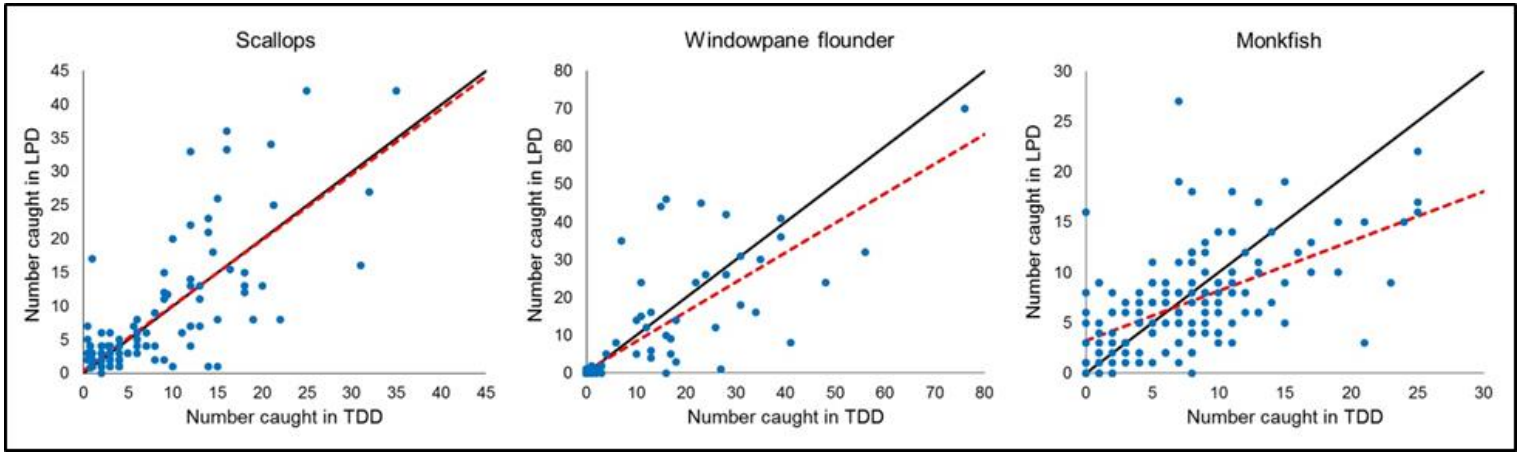






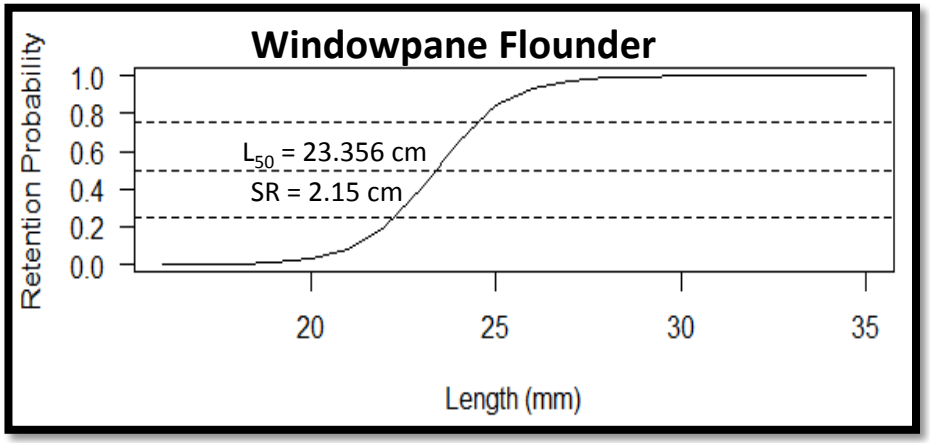


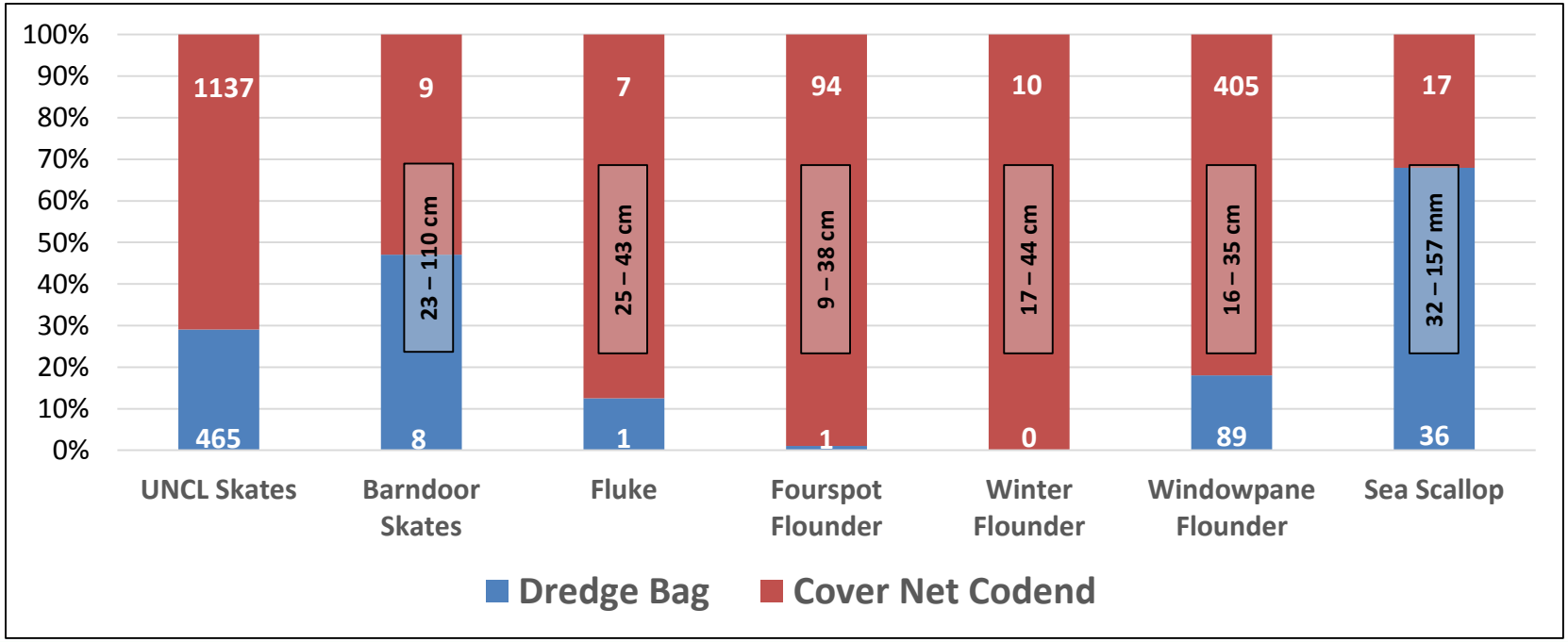
How CFD Modeling can influence gear design?



- The original LPD design significantly reduced scallop by ~31%
- The new LPD design does not have a significant reduction in scallop catch
  - Applying the same approach in the future will reduce wasted research effort on non-working frame designs

Dredge Cover Net





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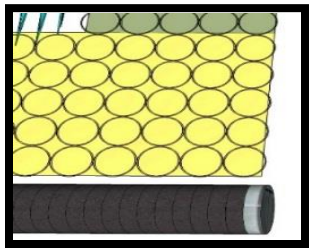
5-row apron



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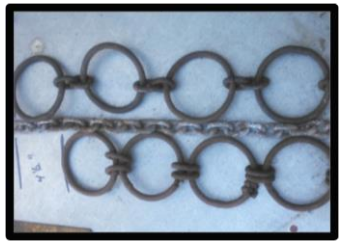

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Photo Credit: Wikipedia

Flogging could also be an effective bycatch reduction AM…

But who to flog?

Captains?

Managers?

Researchers?

Everybody?