Evaluation of Turtle Excluder Devices (TEDs) Mid-Atlantic Scallop Trawl Fisheries: Results of Experiments Conducted in 2007 and 2009

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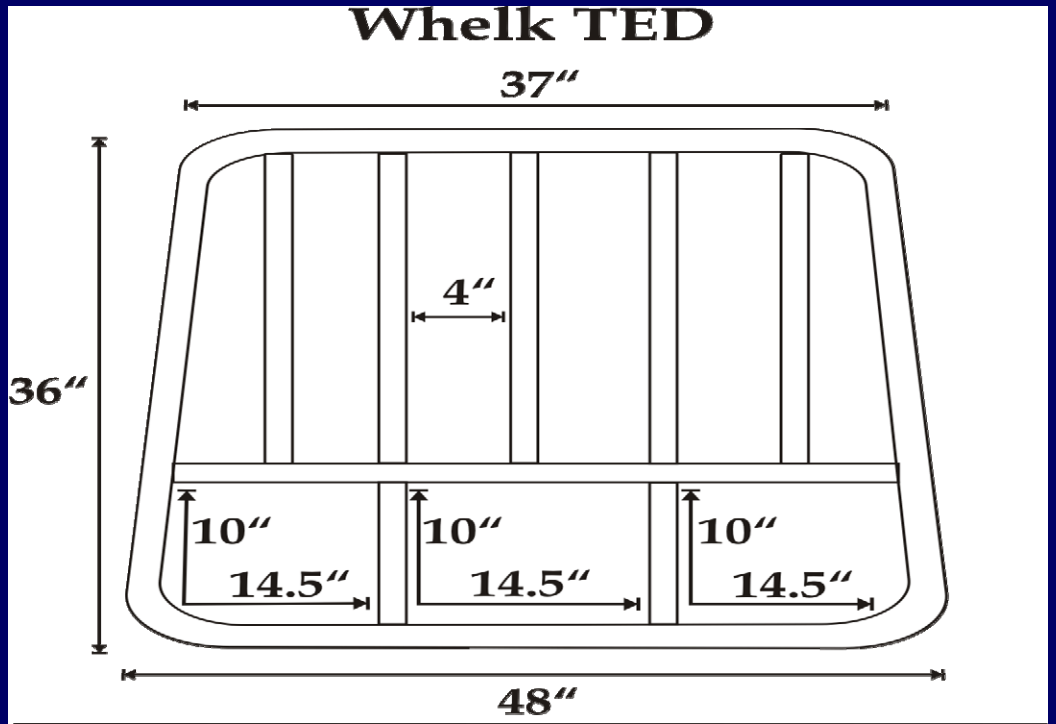
Research Objectives

- Evaluate effect of TED on catch efficiecy
  - Target catch weight
  - Target catch size
- Investigate TED effects on catch efficiency for bycatch species

Experimental Design

- Charter scallop trawl vessels from the mid-Atlantic that tow two nets simultaneously
- Alternate the net with the TED on a daily basis to minimize side bias
- Determine the weight of scallops caught in each net separately for each haul
- Measure 100 shell heights from each net on every haul
- Collect data on bycatch from each net

2007 experiment: used a whelk TED with small opening in scallop and flounder trawls



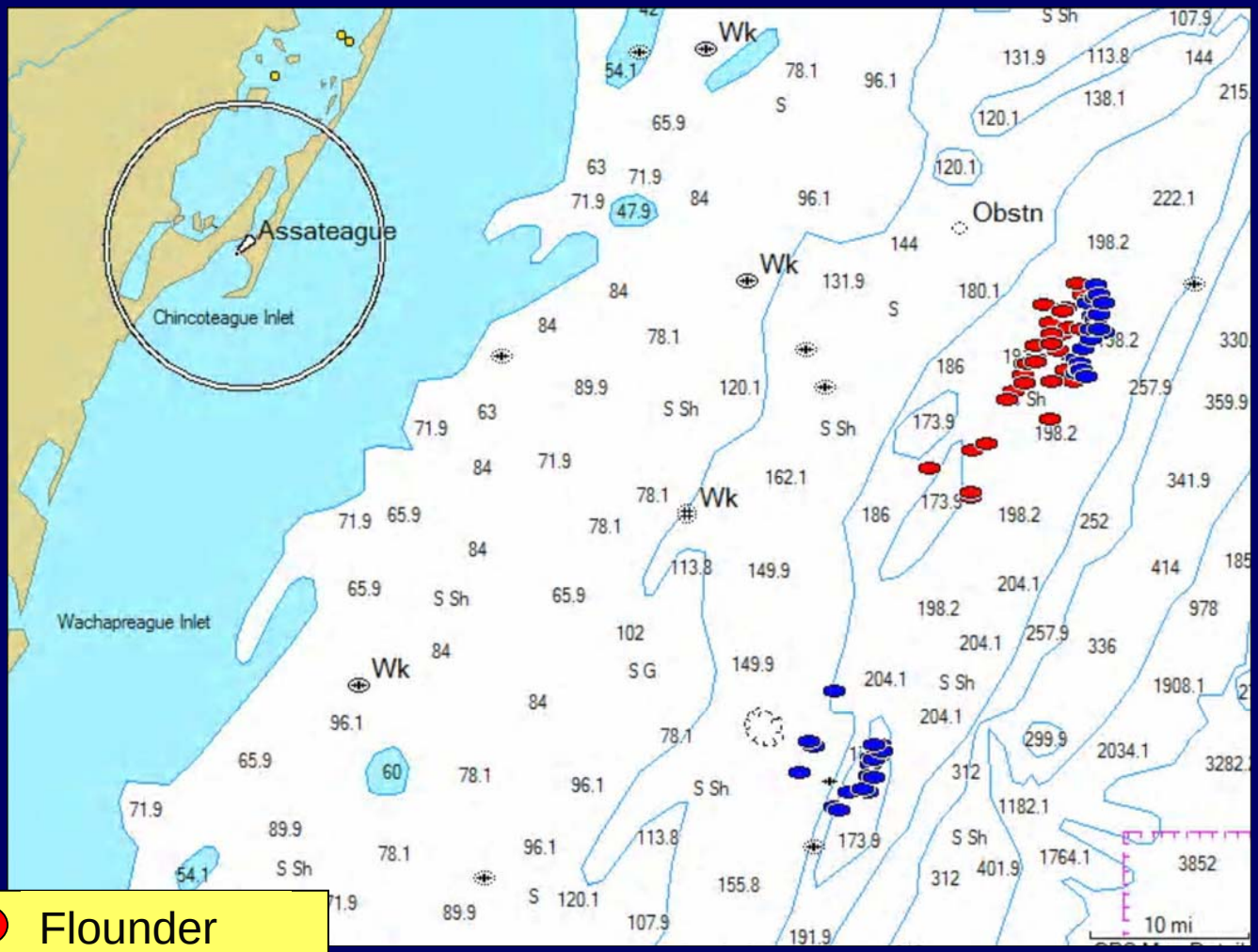
Construction:

Outer Frame	=	1 1/4" aluminum pipe (i.d.)
Interior Bars	=	3/4" aluminum pipe (i.d.)

Installation:

Extension	=	3 1/2", braided, 4mm, double poly (100m x 20m)
Exit Hole Cut	=	28 1/2" x 81"
Flap	=	1 1/2" poly, 102" x 36"
Flotation	=	(2) 8" hard plastic
Fishing Angle	=	48 degrees, top opening configuration

2007 Field Study



Flounder net

Scallop net

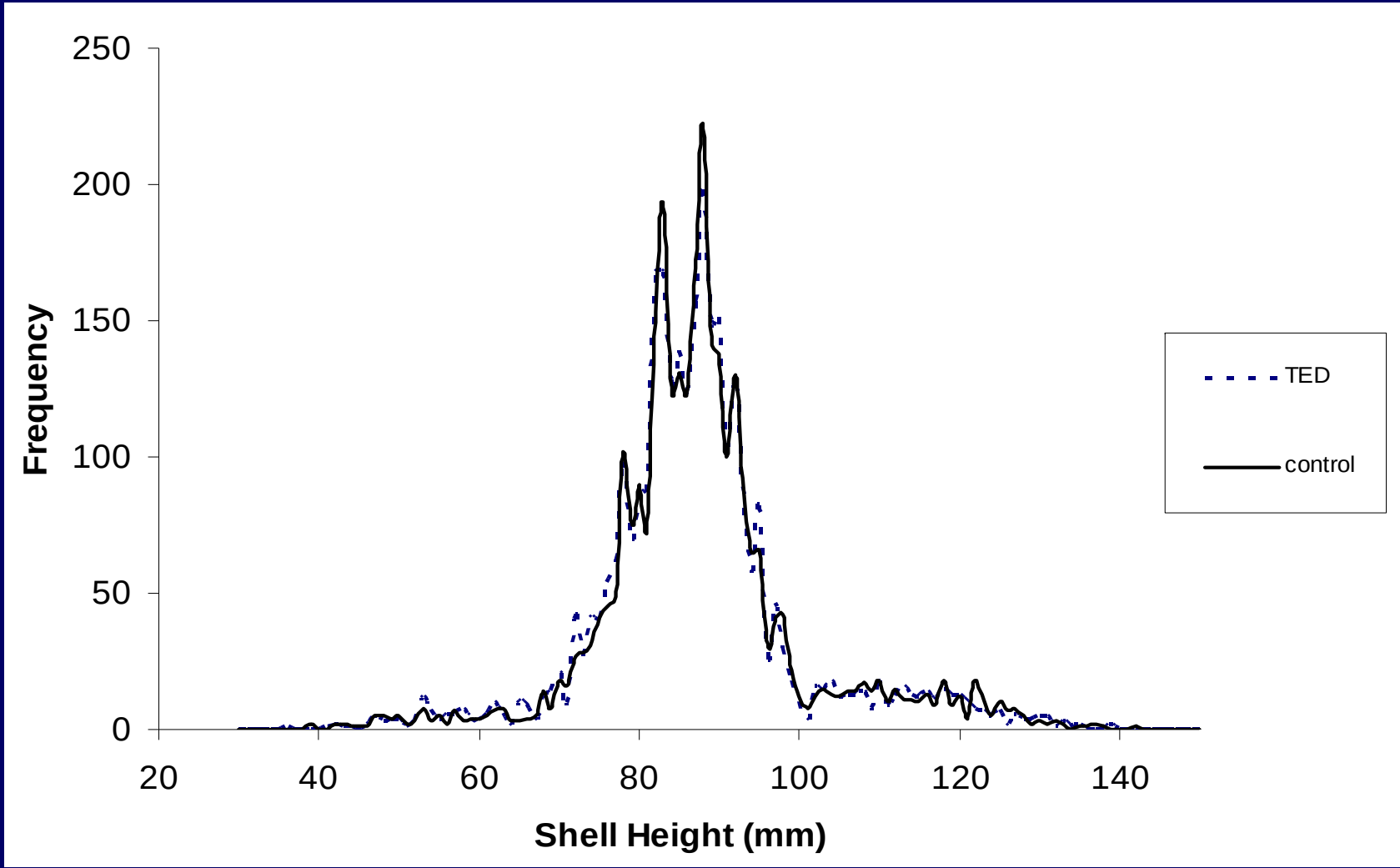
Results of 2007 experiment: Leg 1 FV Capt Dell, flounder trawl

Specie	mean TED kg/tow	mean Control kg/tow	Ratio T/C	N	P value	Signif
scallop	288	313	0.92	35	0.025	*
bycat	8	9	0.90	30	0.023	*
skate	5	5	1.00	30	0.975	-
monkf	3	4	0.75	30	0.563	-

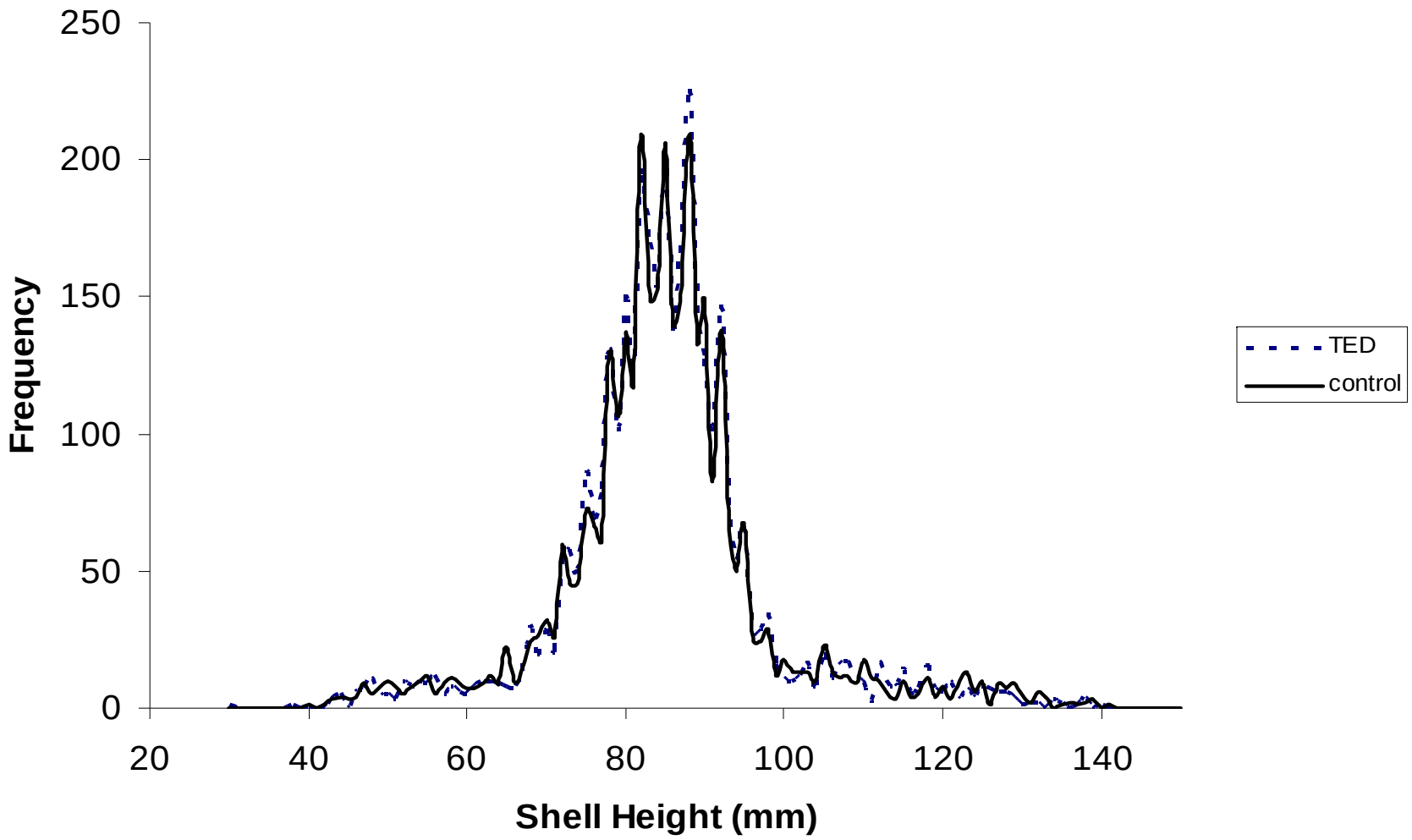
Results of 2007 experiment: Leg 2 FV Capt Dell, scallop trawl

Specie	mean TED kg/tow	mean Control kg/tow	Ratio T/C	N	P value	Signif
scallop	307	330	0.93	46	0.028	*
bycatc	3	4	0.74	36	0.068	-
skate	1	1	1.00	36	0.429	-
dogfish	2	2	1.00	36	0.563	-

Leg 1, Flounder net scallop height-frequency from all tows



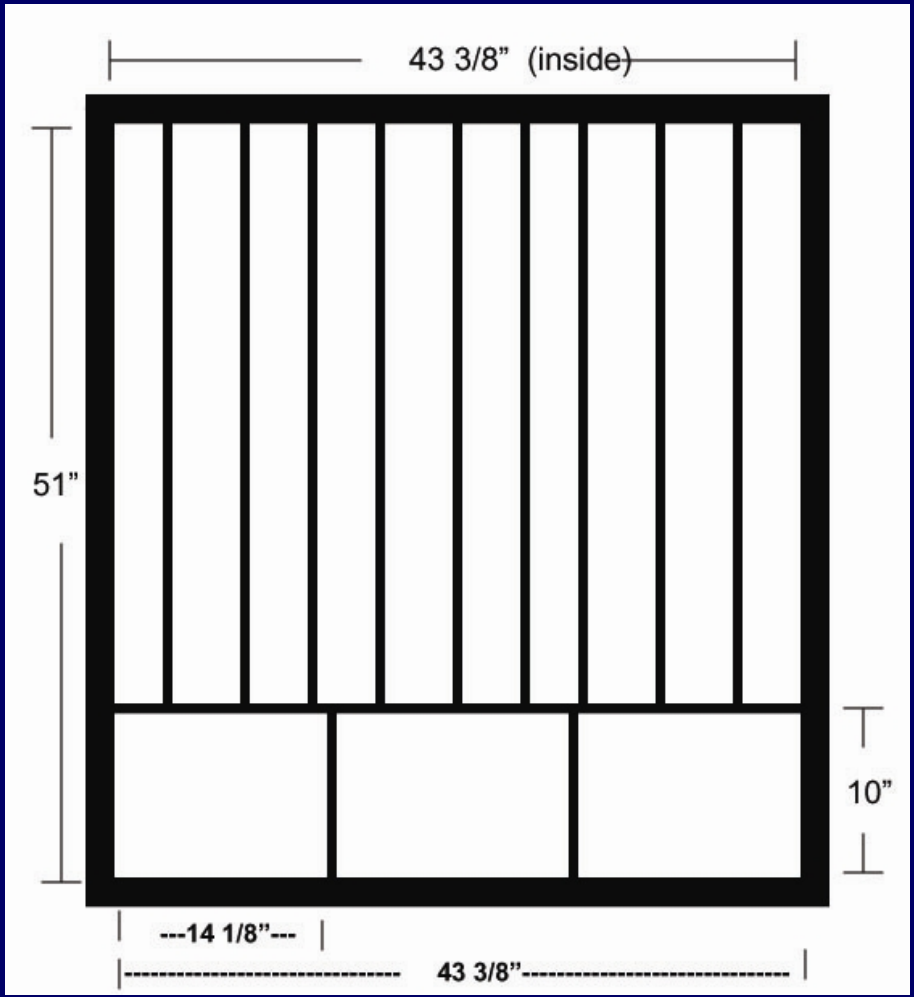
Leg 2, scallop net scallop height-frequency from all tows



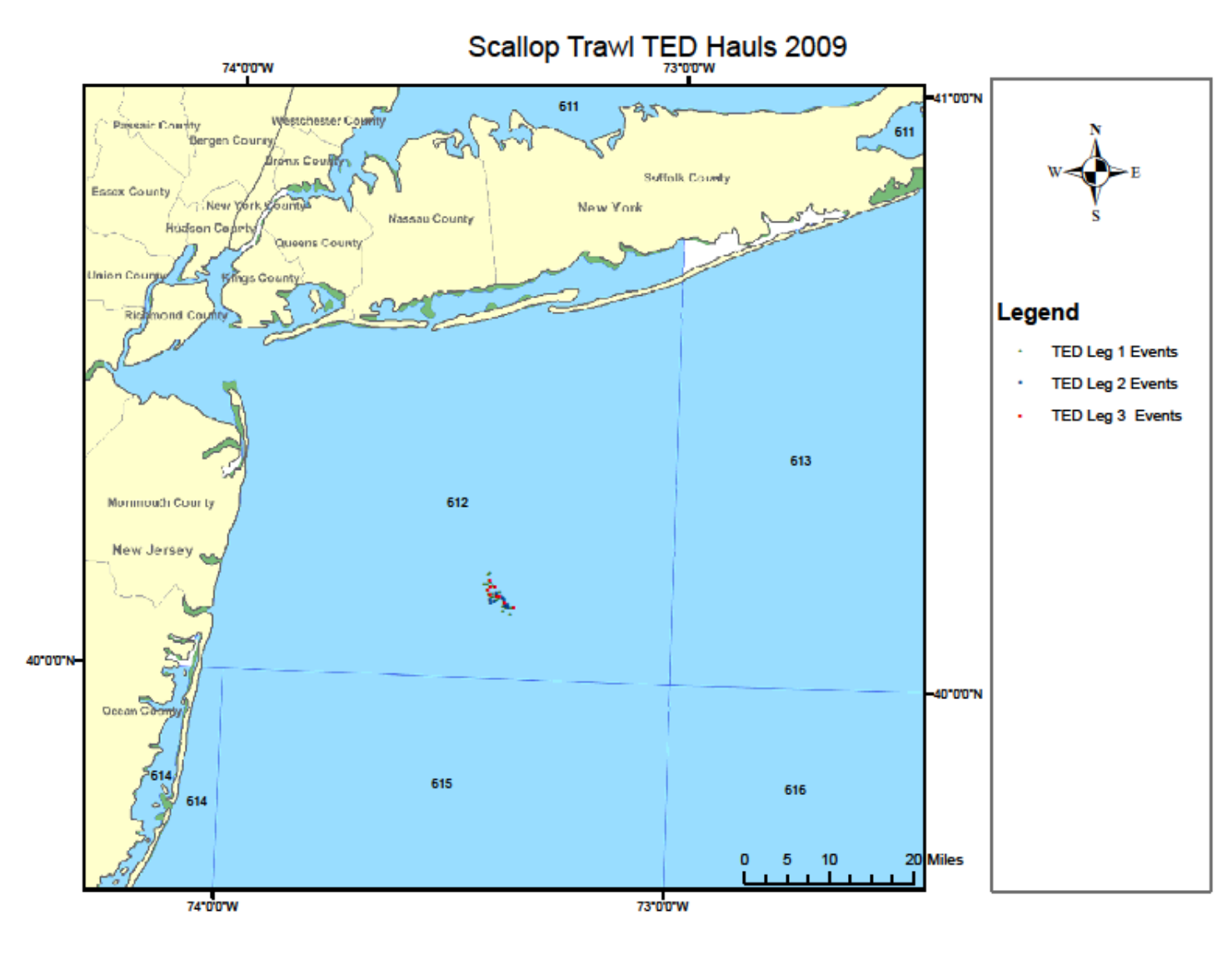
Conclusions: 2007 experiment, whelk TED with small opening

- Fishery very clean, very low bycatch, <5%
- Significant ;oss of scallops by weight with both trawl designs is about 7%
- No difference in the size distribution of scallop catch, a single year class being fished off the Delmarva

2009 experiment: used a larger flounder TED in a scallop trawl with a large opening



2009 Field Study



Results of 2009 experiment: Leg 1 FV Capt Dell

Specie	mean TED lbs/tow	mean Control lbs/tow	Ratio T/C	N	P value	Signif
scallop	731	788	0.93	18	0.009	**
all	842	932	0.90	18	0.001	***
skate	55	60	0.89	18	0.007	**
dogfish	13	27	0.51	18	0.030	*

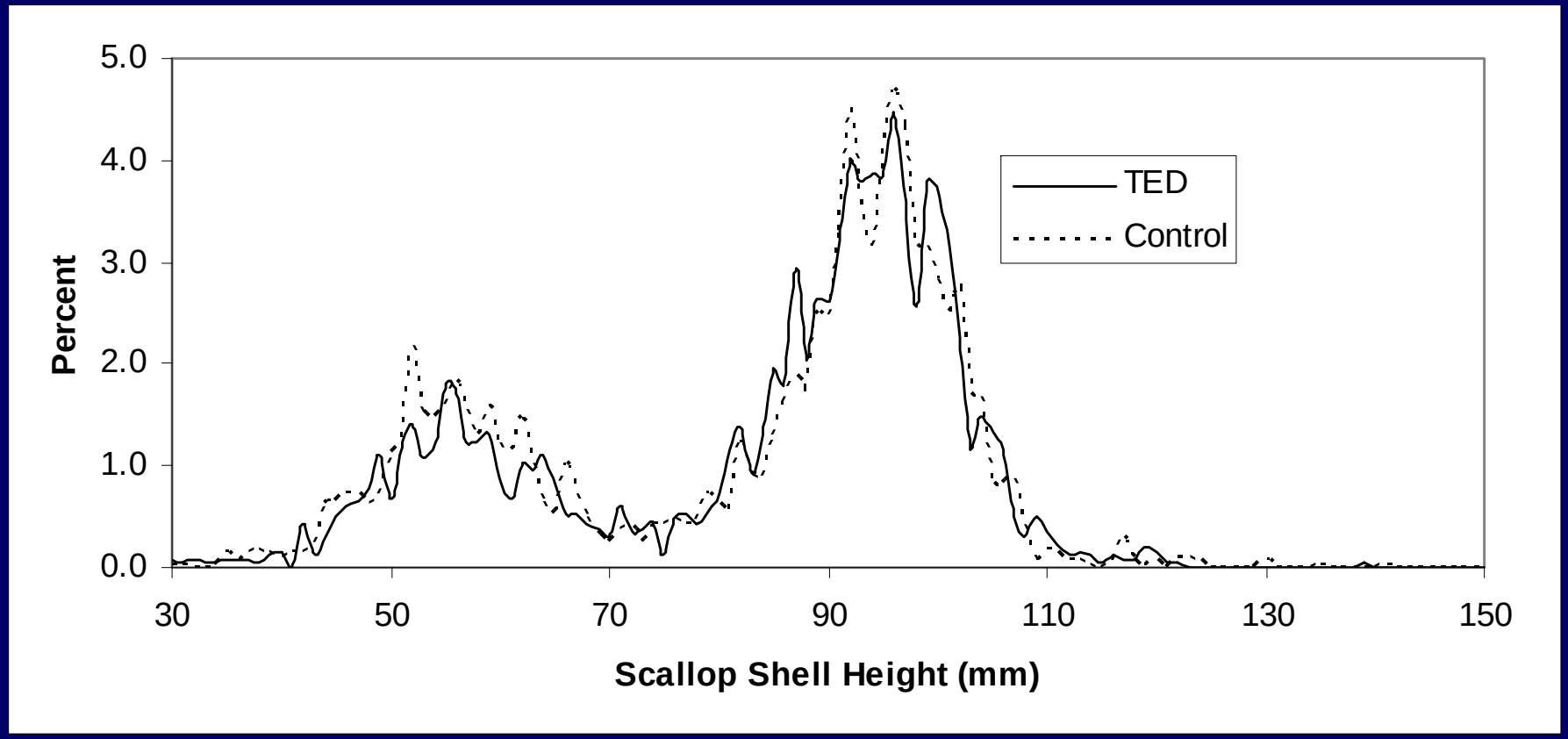
Results of 2009 experiment: Leg 2 FV Papa's Girl

Specie	mean TED lbs/tow	mean Control lbs/tow	Ratio T/C	N	P value	Signif
scallop	600	643	0.93	9	0.120	-
all	634	723	0.92	9	0.073	-
skate	29	27	1.06	9	0.296	-
dogfish	3	3	0.96	9	0.476	-

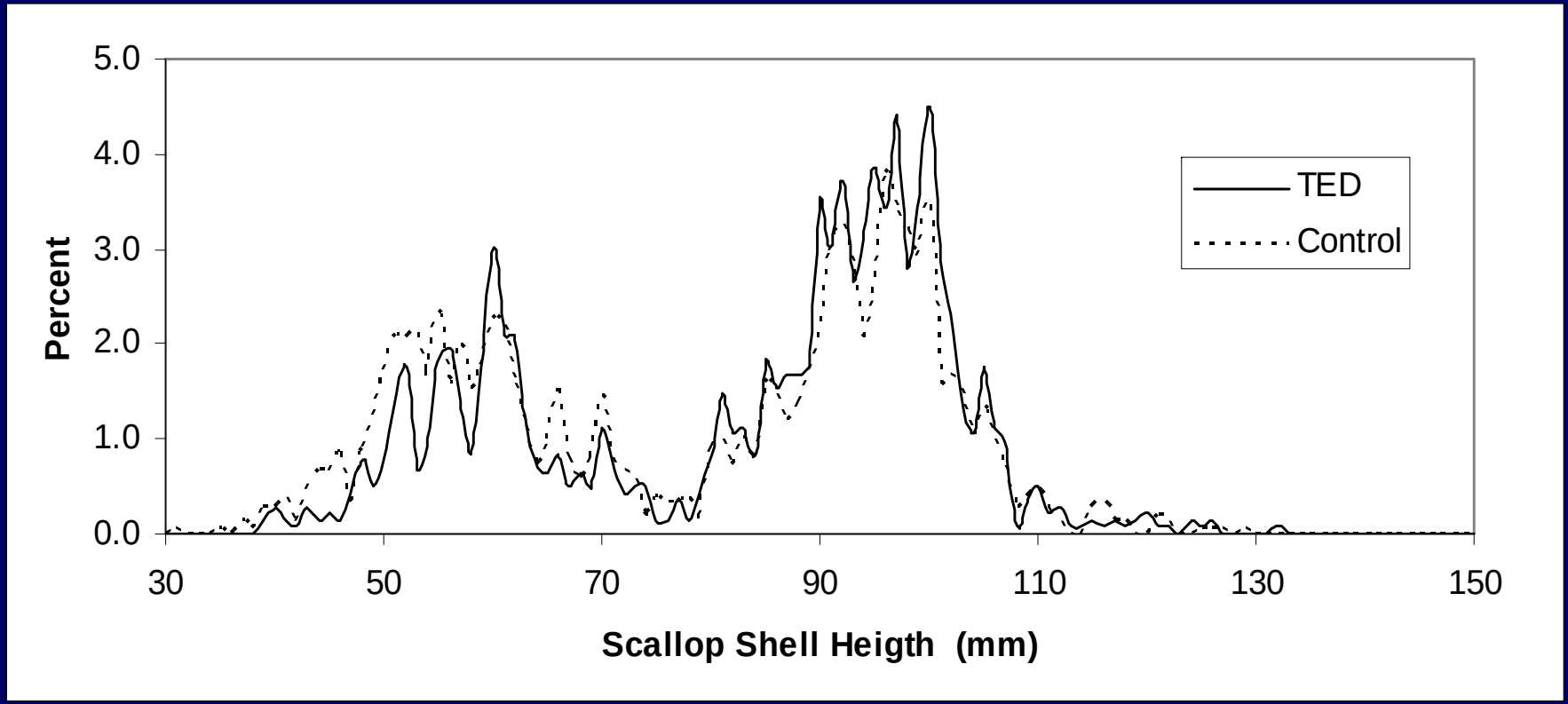
Results of 2009 experiment: Leg 3 FV Capt Dell, added an extension section ahead of TED

Specie	mean TED lbs/tow	mean Control lbs/tow	Ratio T/C	N	P value	Signif
scallop	644	766	0.87	9	0.055	-
all	759	872	0.87	9	0.054	-
skate	42	41	1.03	9	0.270	-
dogfish	-	-	-	9	-	-

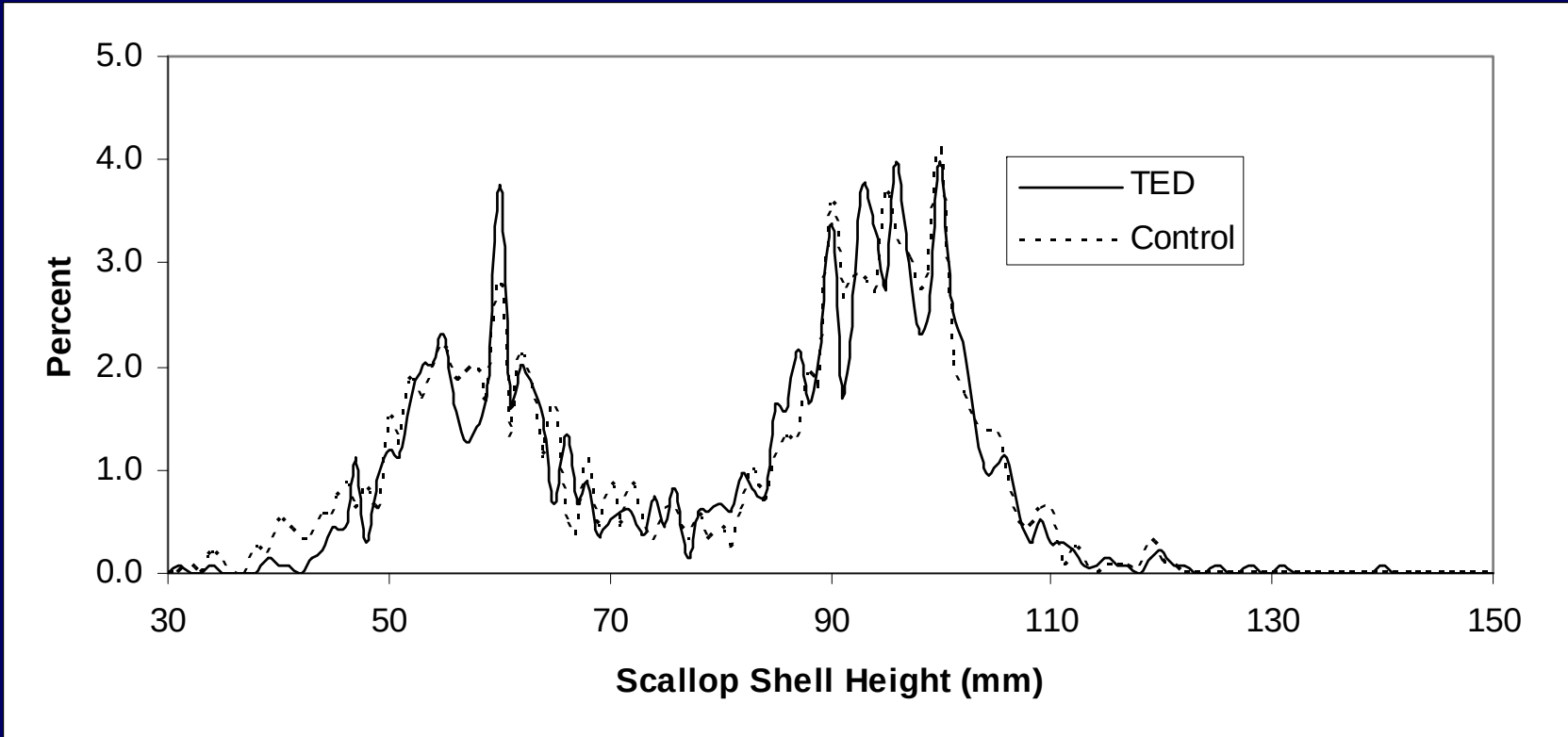
Results of 2009 experiment: Leg 1 FV Capt Dell



Results of 2009 experiment: Leg 2 FV Papa's Girl



Results of 2009 experiment: Leg 3 FV Capt Dell



Conclusions: 2009 experiment, larger flounder TED with large opening

- Also a clean fishery, low bycatch, <15%
- Loss of scallops by weight on average is about 7%, and it is significantly different from 0
- No difference in the size distribution of scallop catch, interestingly a two year classes being fished off New Jersey

Questions: