

UPDATED TOW DURATION ANALYSIS

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Virginia Institute of Marine Science

Sea Scallop Benchmark Assessment Meeting

March, 2018

Woods Hole, MA



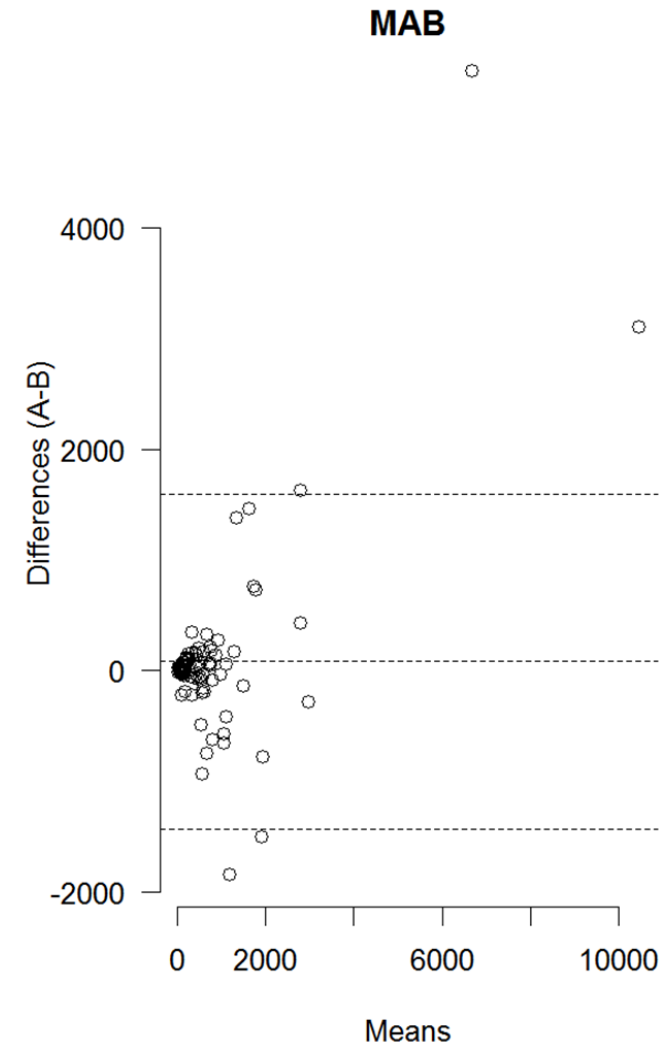
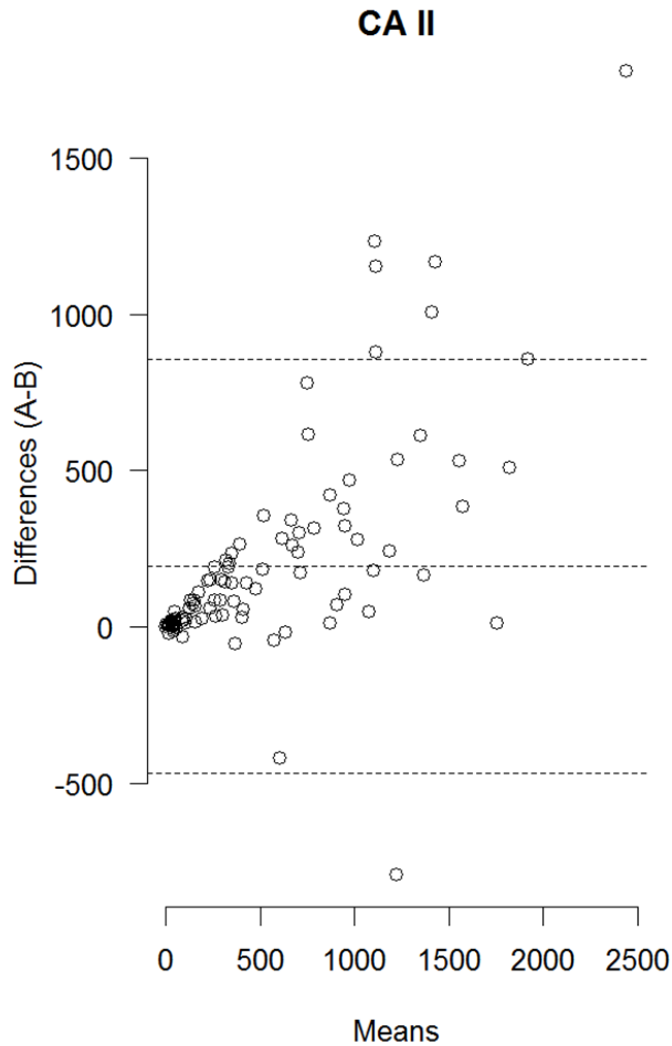
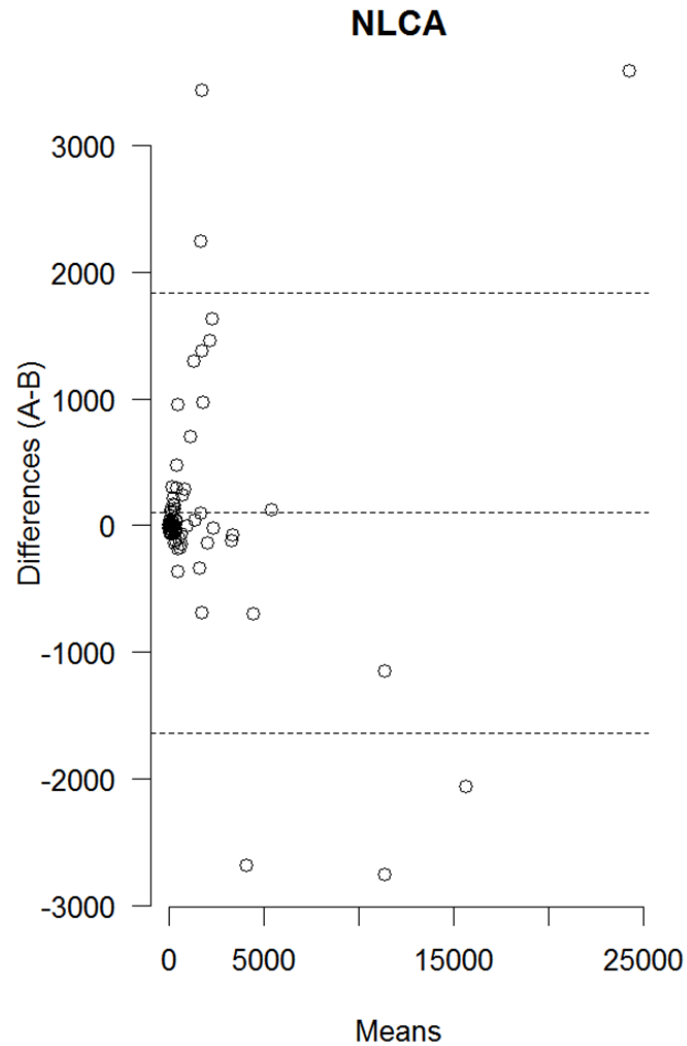
Updates

- Checked data
- Bland-Altman plots
- Looked at scallop catch/trash catch relationship
- Analyzed unlined data
- Tried to incorporate total catch, scallop catch and trash catch
 - Talked with Tim Miller
 - Reviewed Browne et al., 2017
 - Used multinomial model with a conditional logistic regression for a quad rig *Nephrops* study and incorporated total catch as a predictor variable
- Used GLMMs and Miller (2013)

Bland-Altman Plots

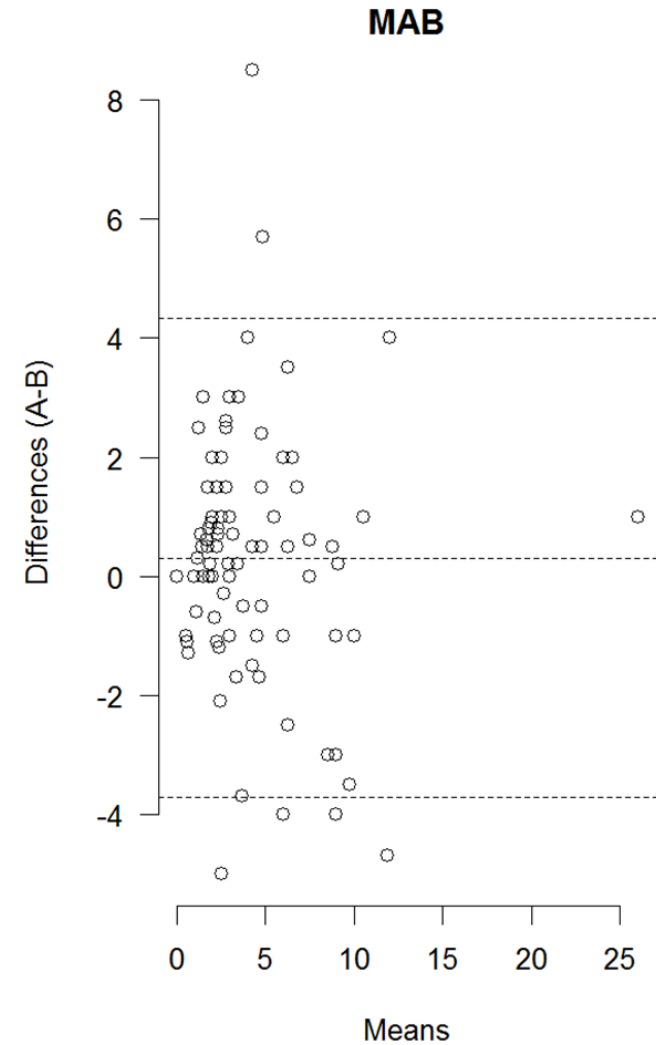
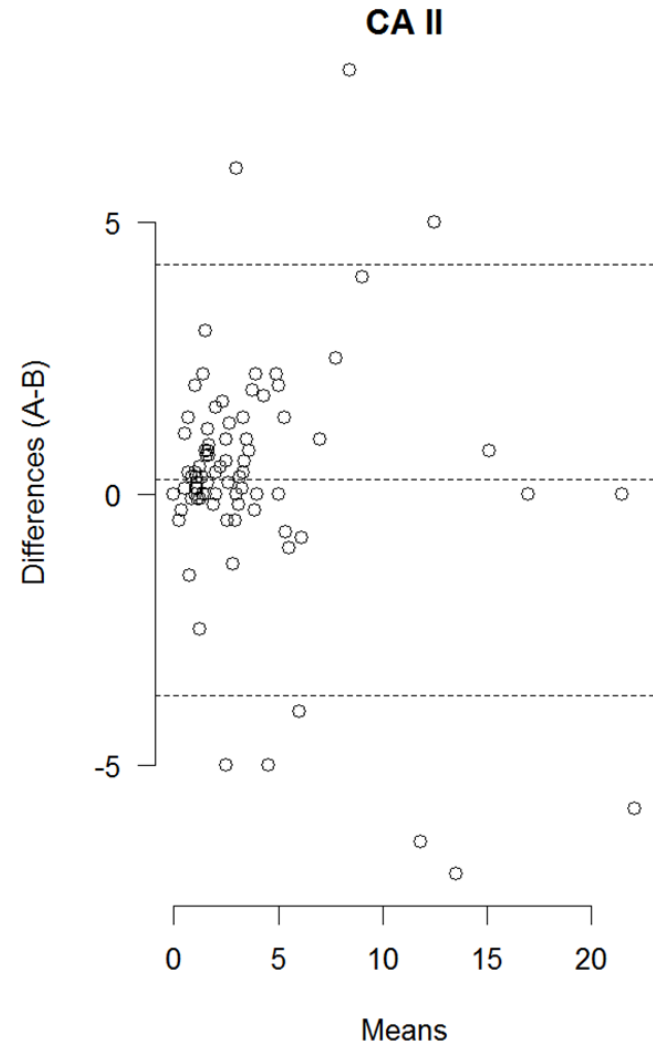
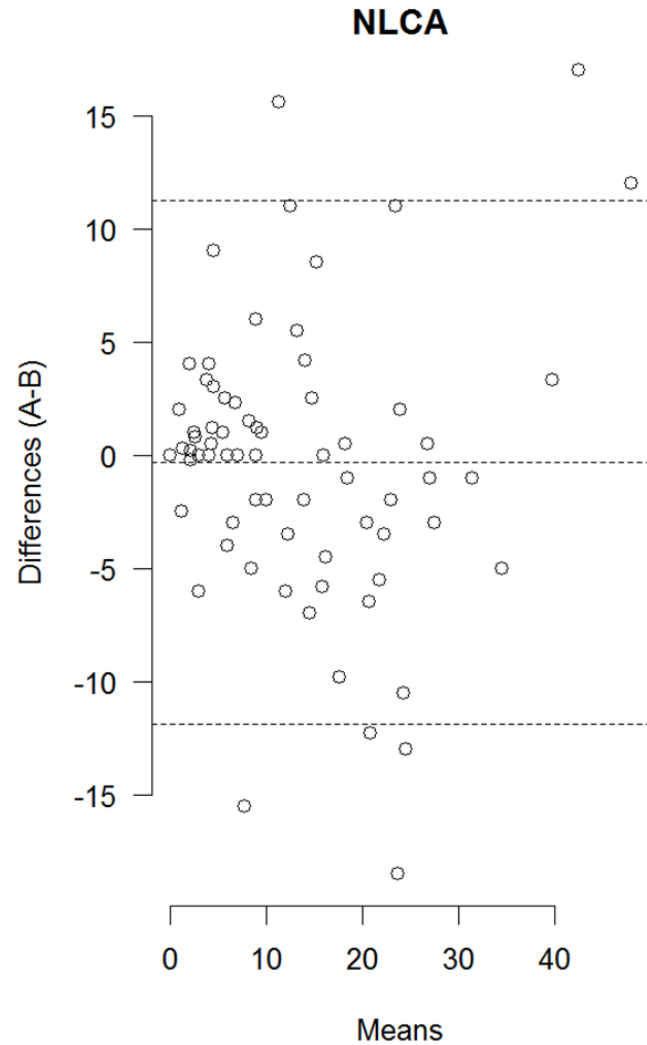
Expanded number of scallops lined dredge

A – 15 min tow, B – 10 min tow



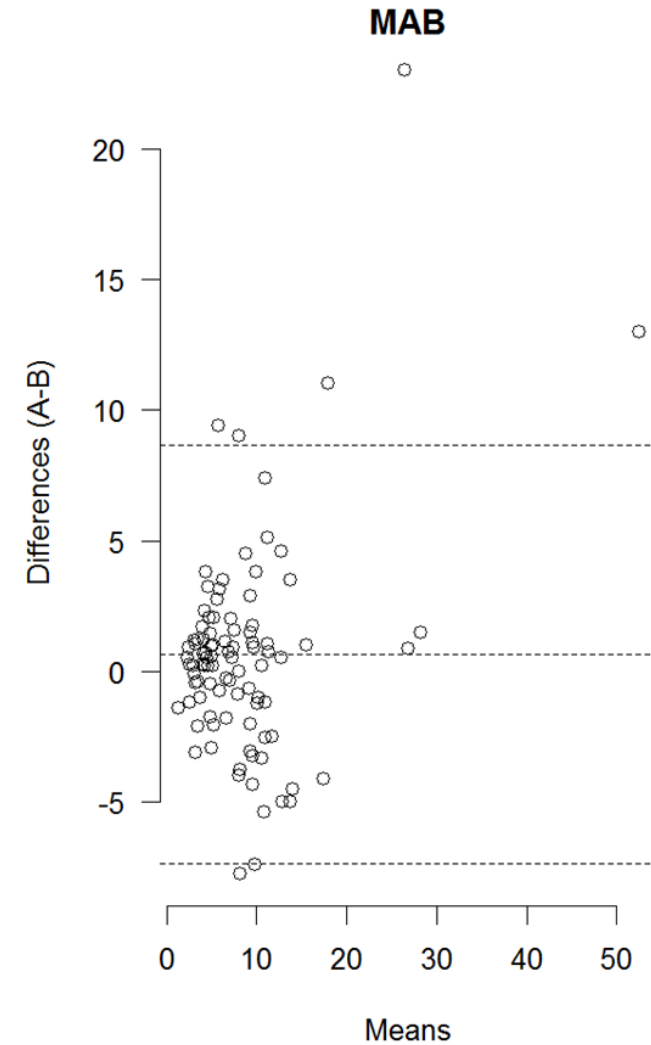
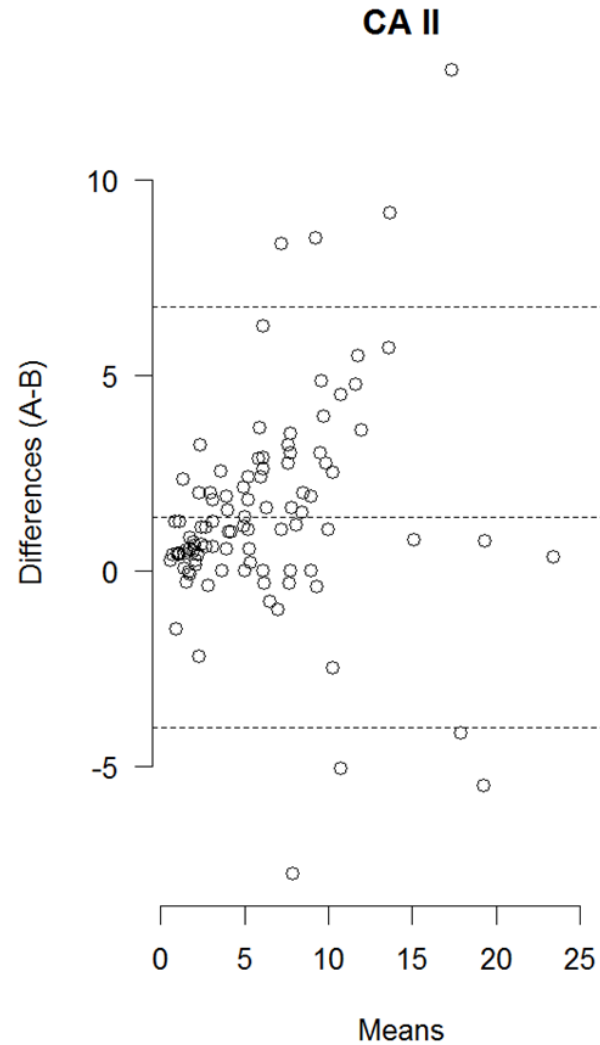
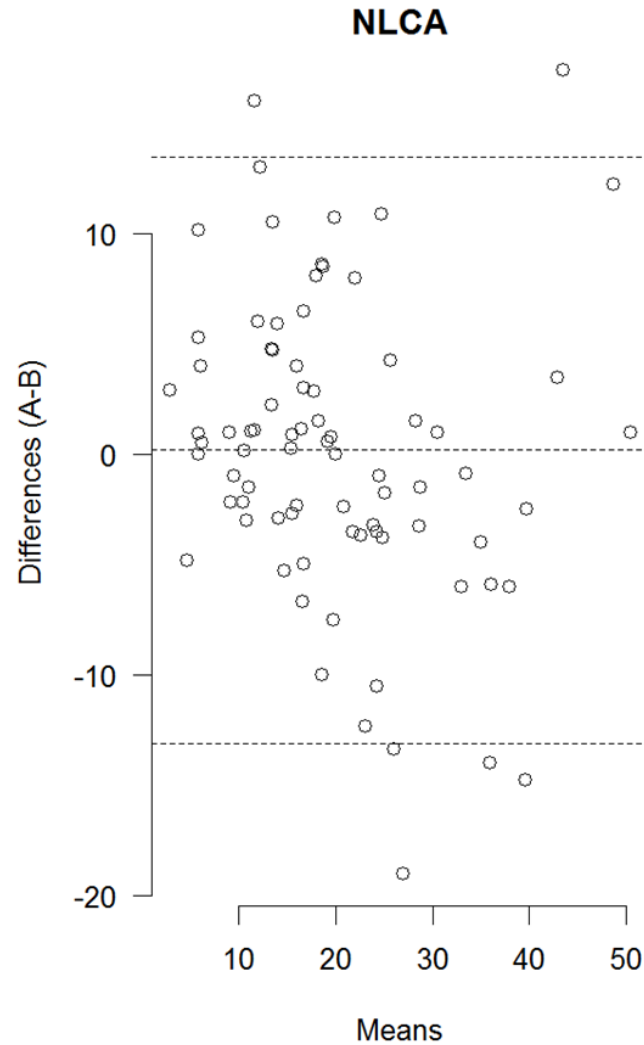
Bland-Altman Plots

Trash catch (baskets) lined dredge
A – 15 min tow, B – 10 min tow



Bland-Altman Plots

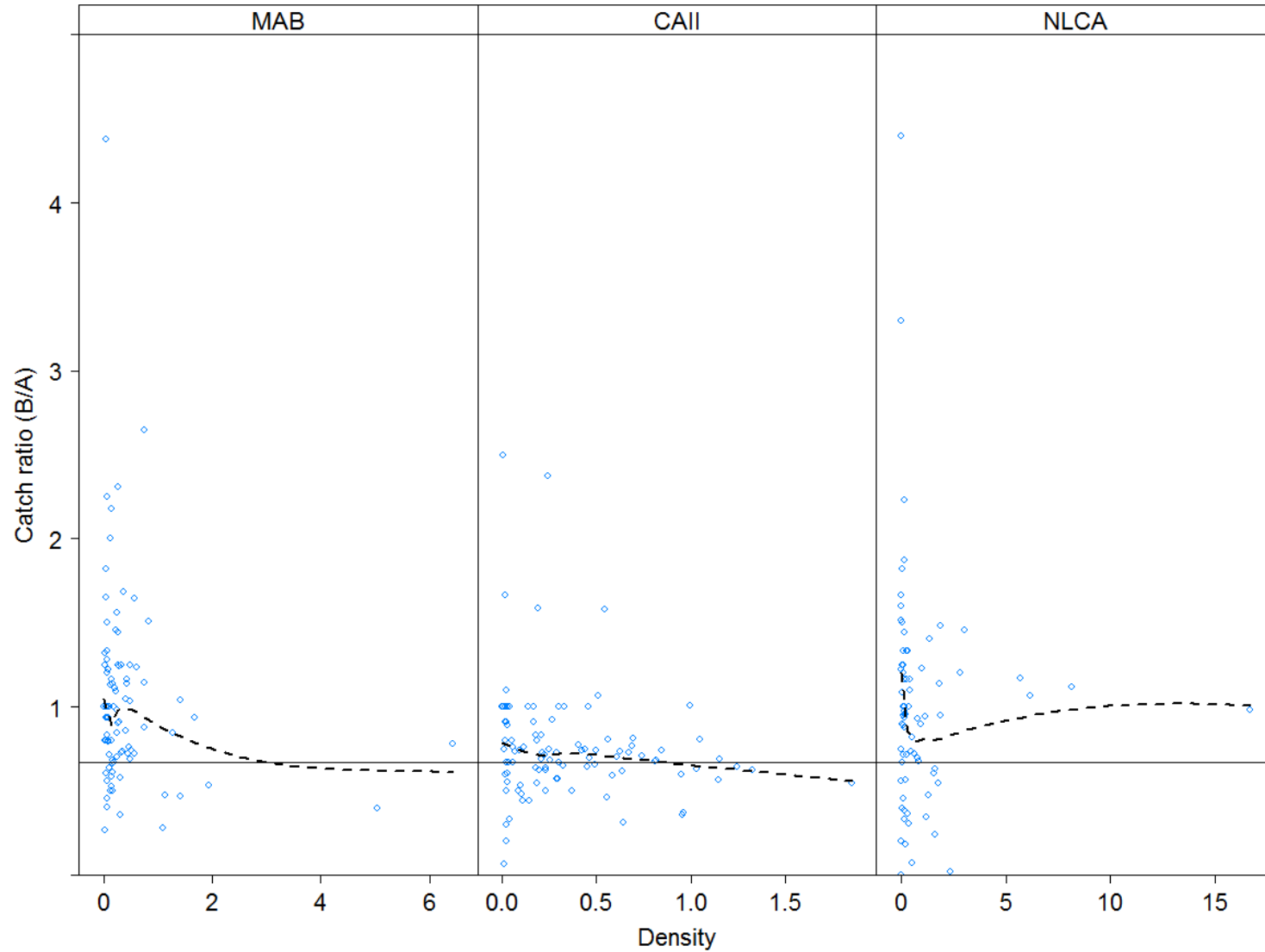
Total catch (baskets) lined dredge
A – 15 min tow, B – 10 min tow



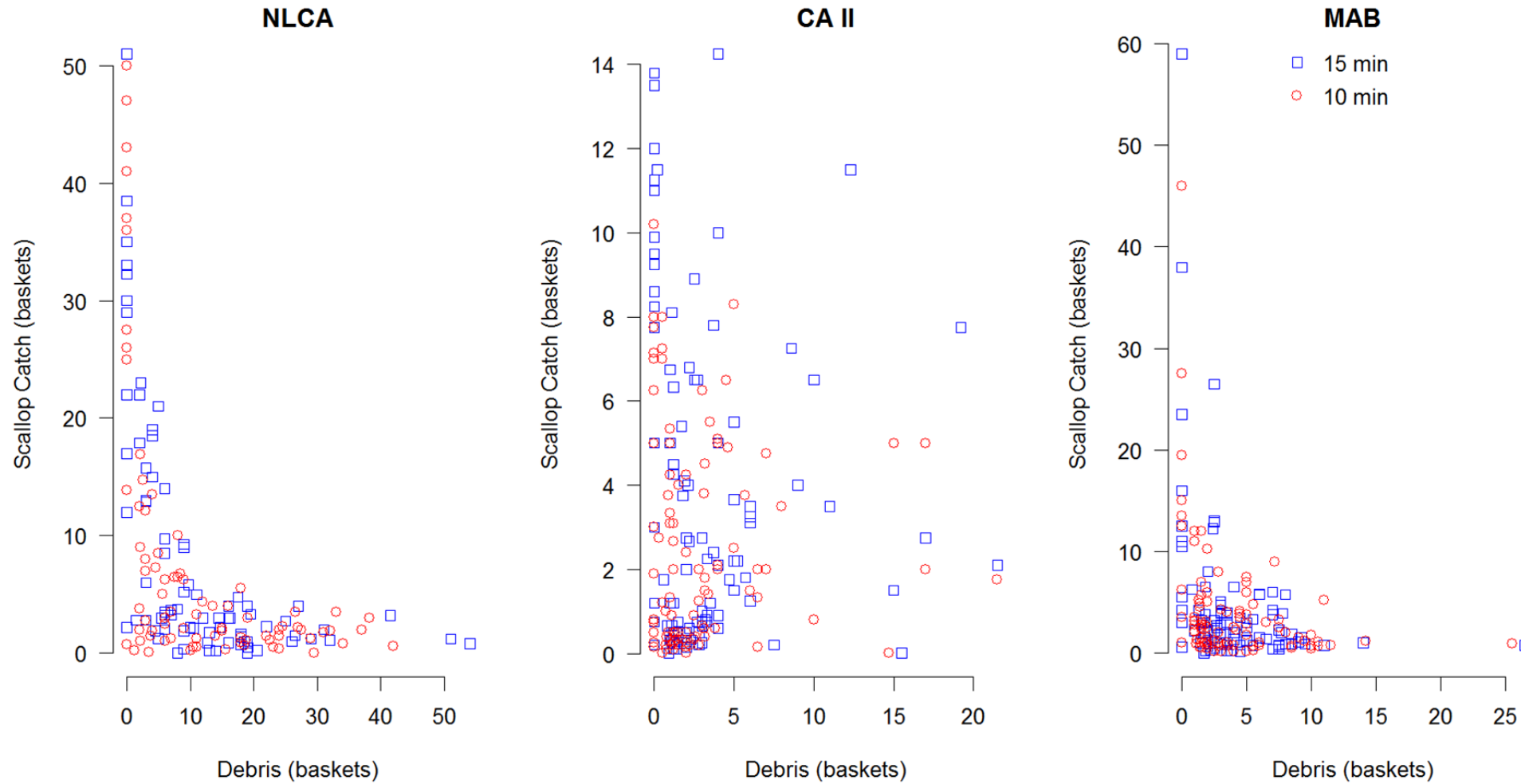
Catch Ratio in Relation to Density

Scallop catch ratio (baskets) lined dredge

A – 15 min tow, B – 10 min tow

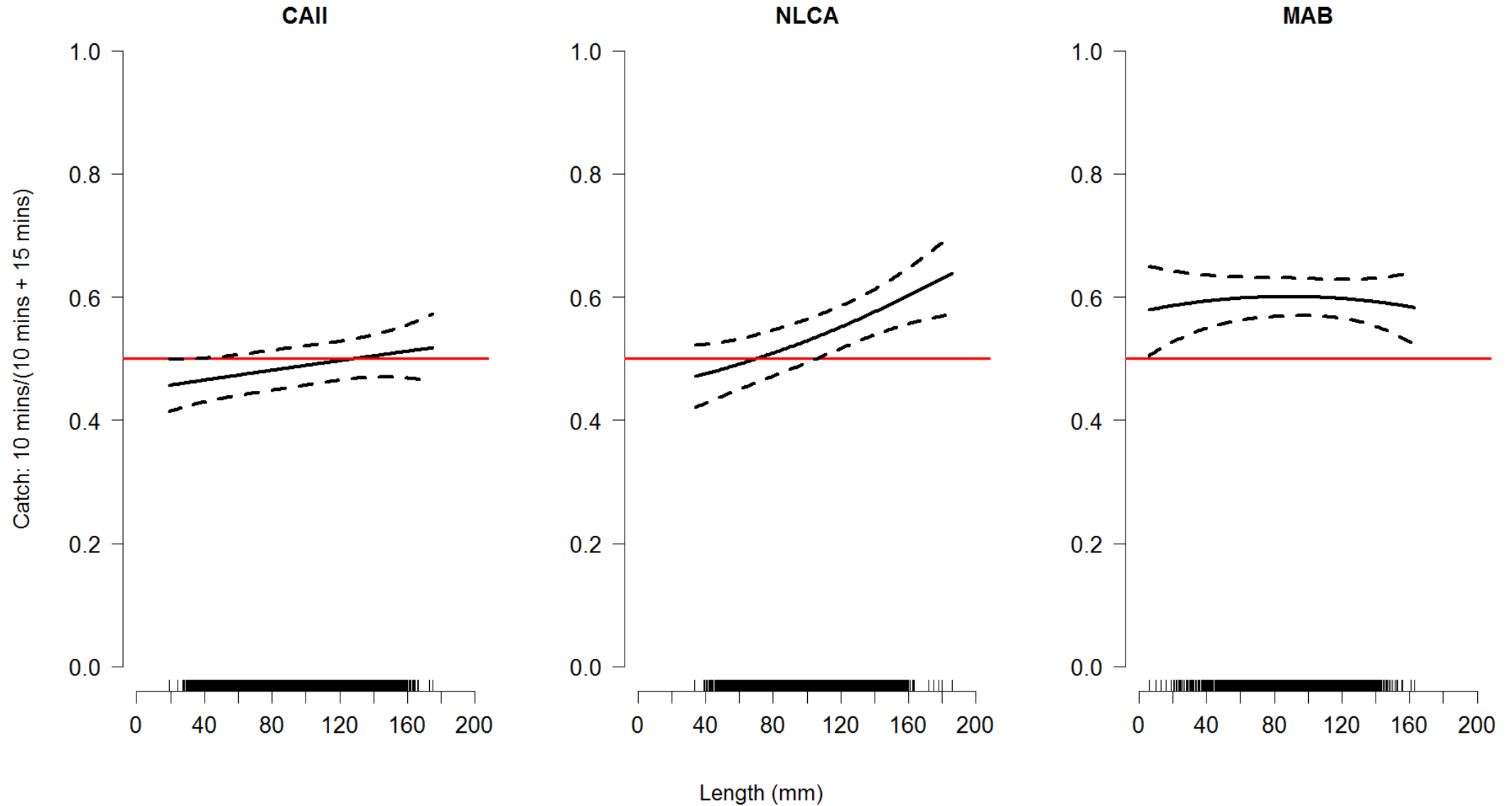


Relationship Between Scallop Catch and Trash lined dredge



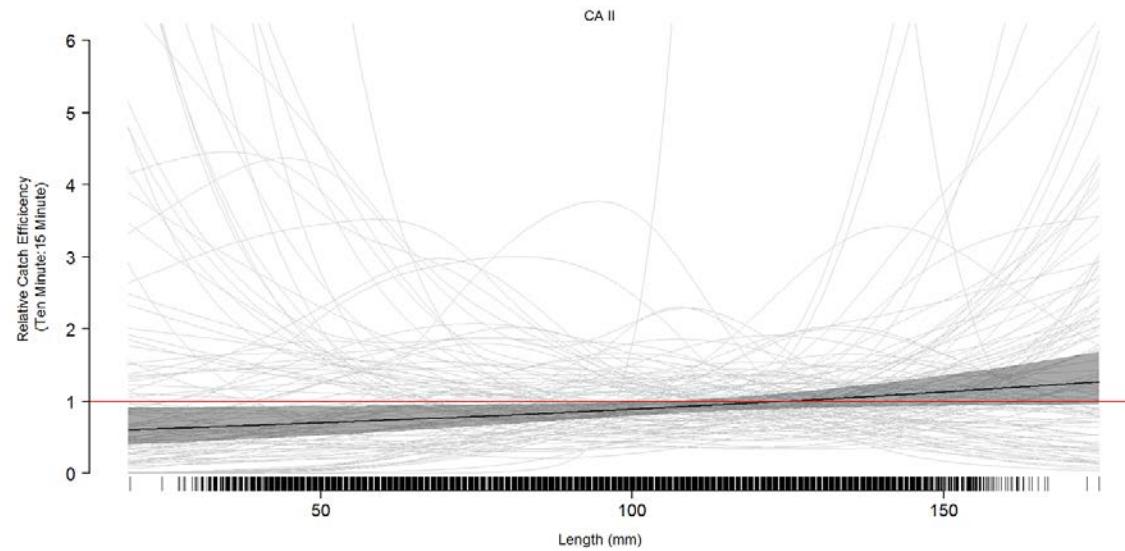
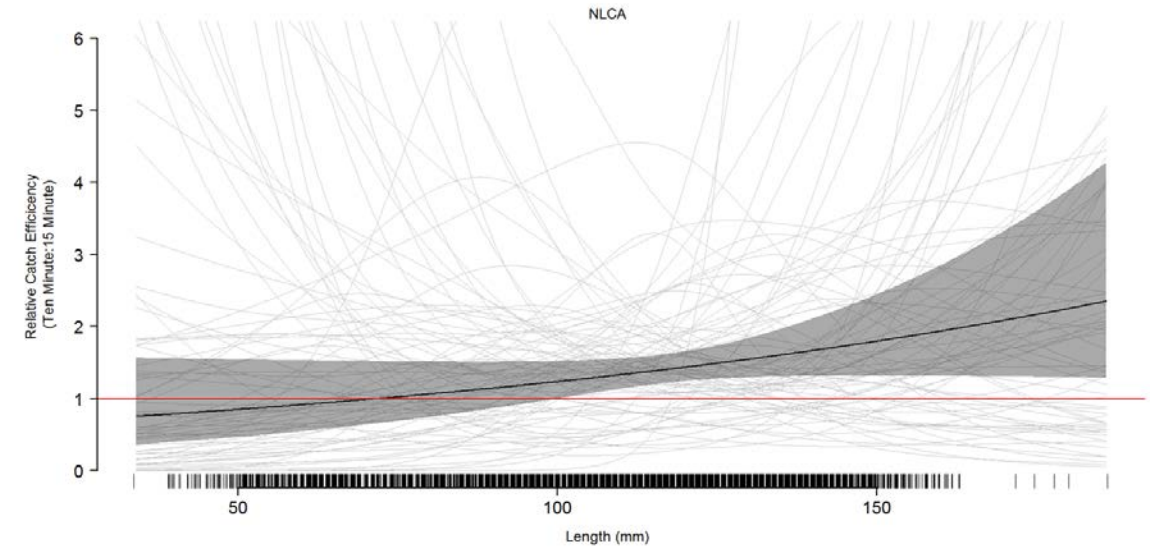
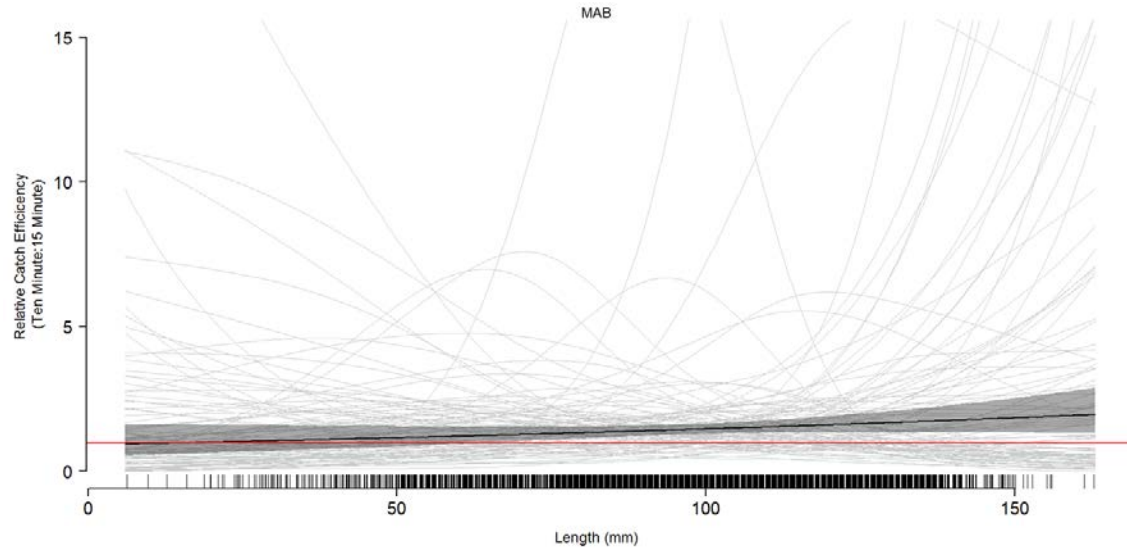
Results – GLMM

Model: $\text{Area} \times \text{Length}^2 + \text{Length}$



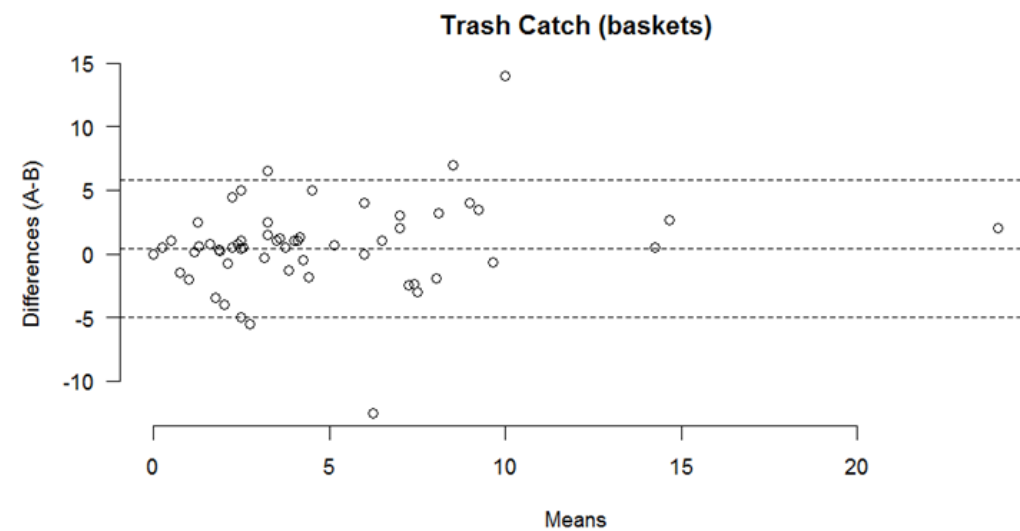
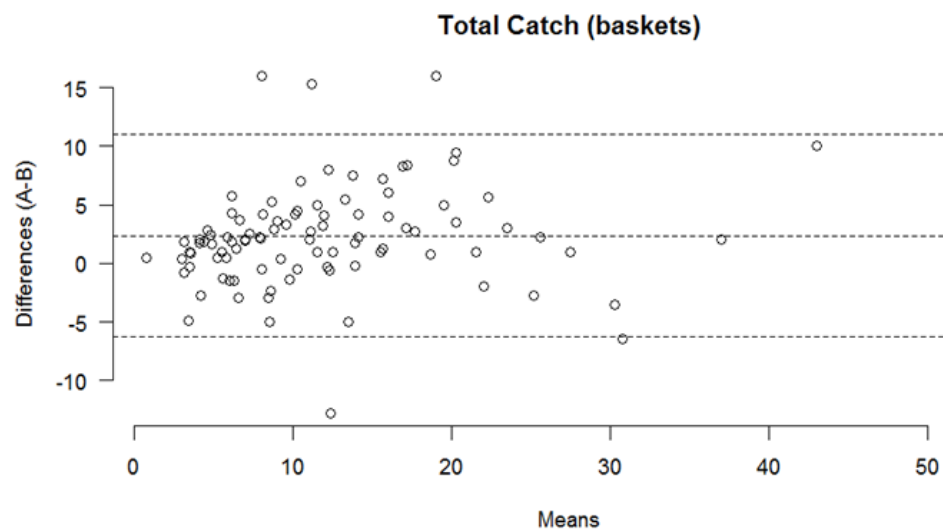
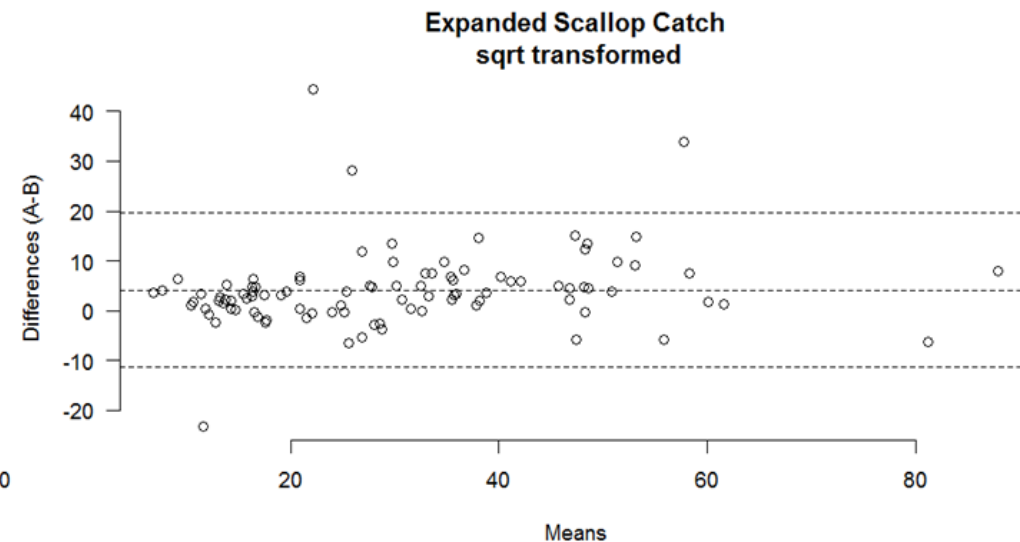
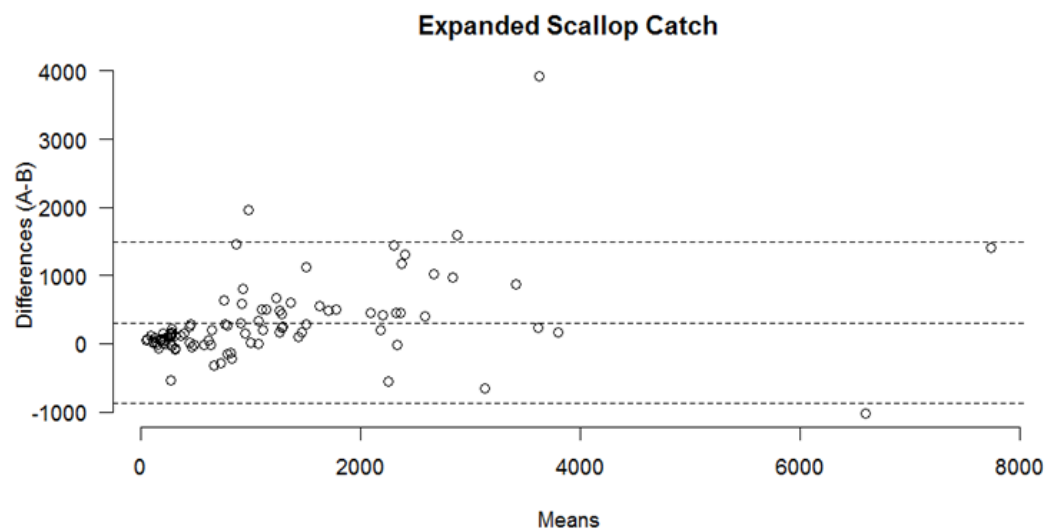
Results – Miller

Best model – BI_4 binomial model with intercept and cubic spline smoother of size for across pair effects and random effects



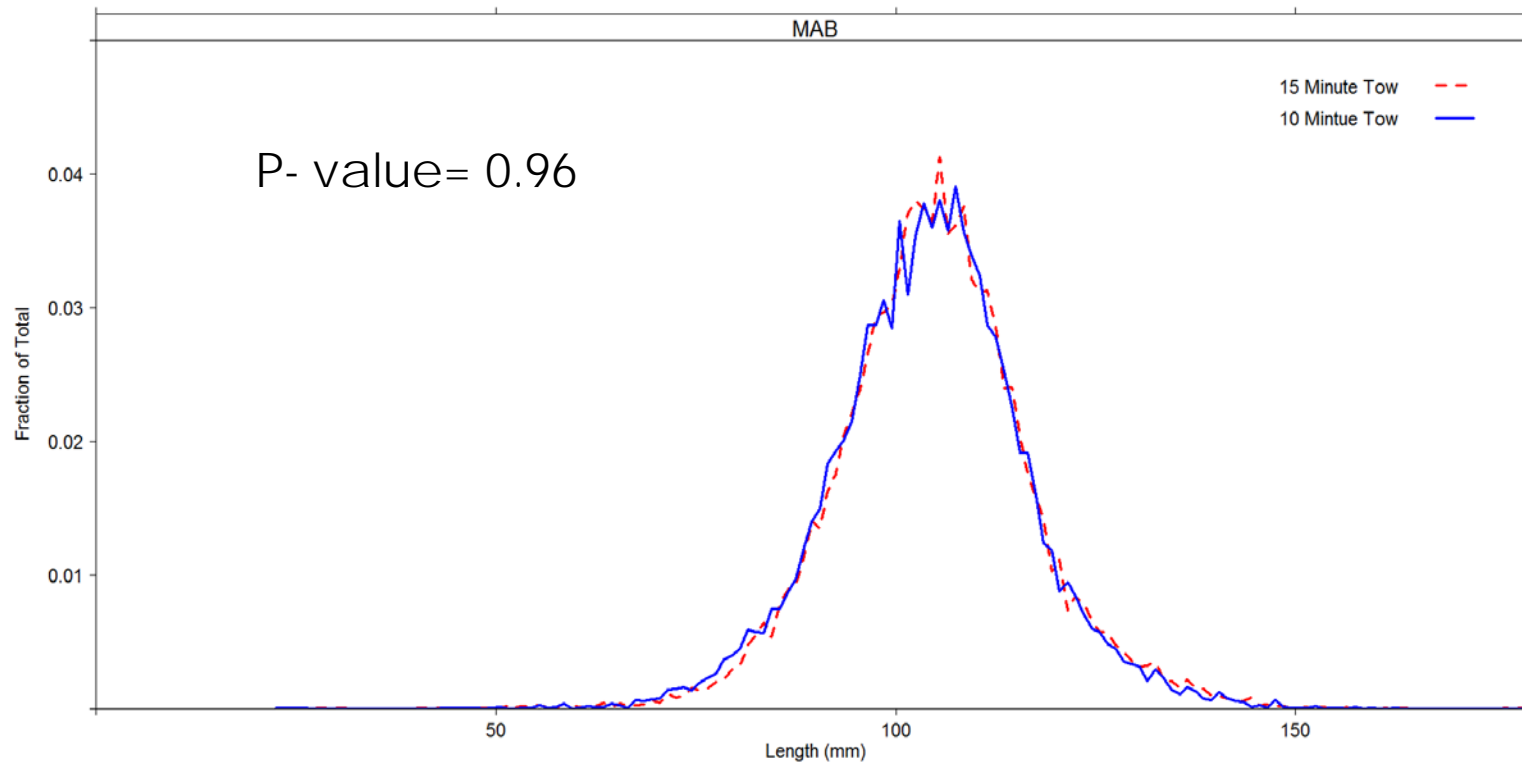
Bland-Altman Plots

Unlined Dredge Pairs



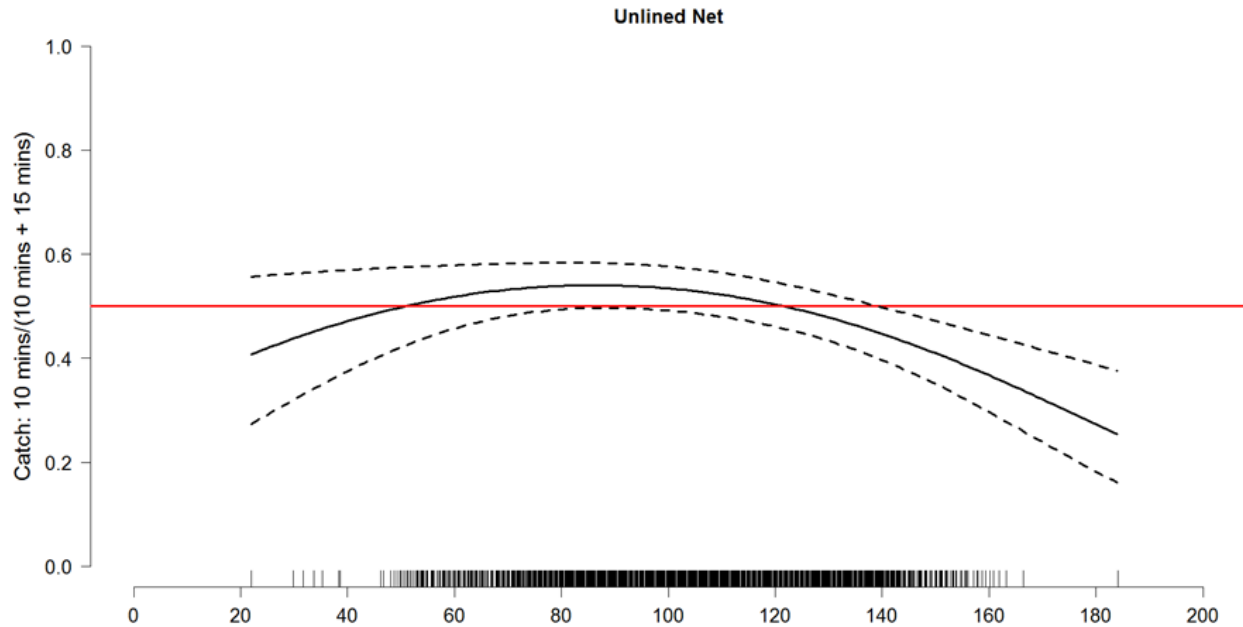
Results – Unlined Pairs

Data	Total Catch (B)	Total Catch (A)	Average Catch (B)	Average Catch (A)	P-value
Expanded Scallop Catch	100,950.56	130,011.89	1,051.57	1,354.29	0.11
Trash Catch (baskets)	256.30	294.40	2.67	3.07	0.51
Total Catch (baskets)	1,080.00	1,306.65	11.25	13.61	

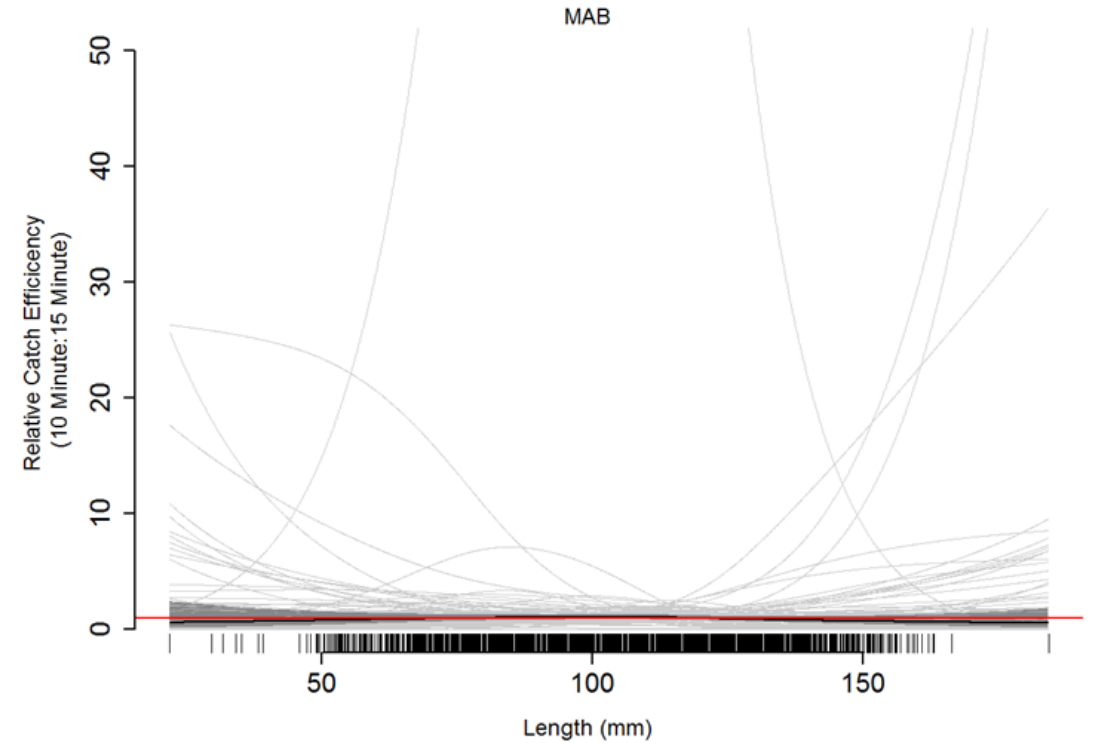


Results – Unlined

GLMM: Length + Length²



Miller: bb7 beta-binomial



intercepts and cubic spline smoothers
of size for mean and dispersion for
across pair effects , intercept and
cubic spline smoother for mean for
random effects