

NTAP Restrictor Rope Research Update

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Many efforts coordinating and performing field work

- Captain, crew from F/V Darana R
- VIMS staff
- RI DEM staff
- ROSA staff
- NEFSC staff



NOAA FISHERIES
Northeast Fisheries Science Center



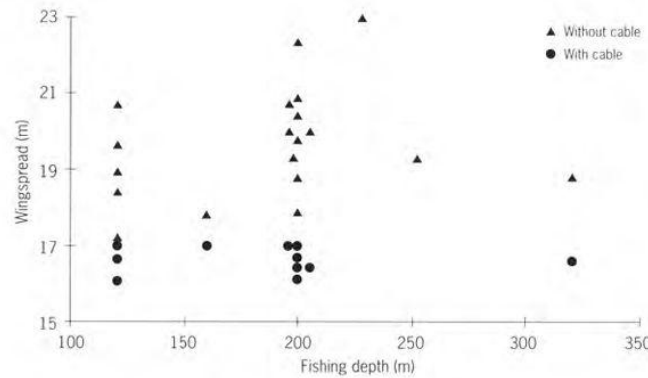
DEM
RHODE ISLAND

Motivation for current work

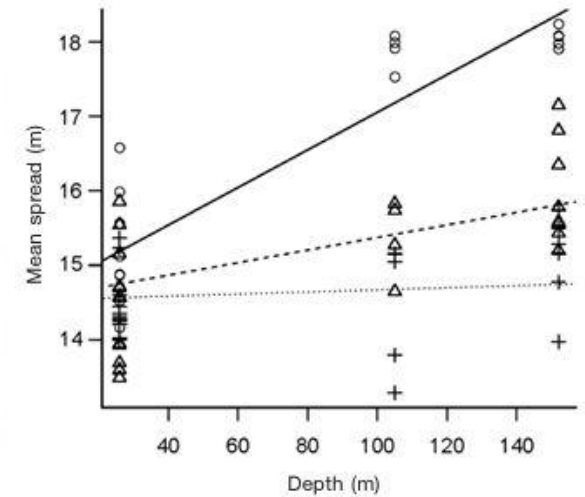
- Evidence in literature for improved trawl geometry with restrictor ropes
- Less information on potential impacts on catch
- Some suggestions that it can impact catches of semi-pelagic species¹
- Has not been recently explored in the northeast US

¹ Rose and Nunnallee (1998), Weinberg and Kotwicki (2015)

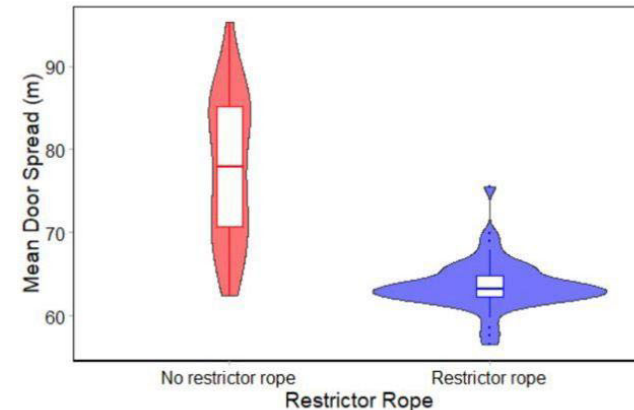
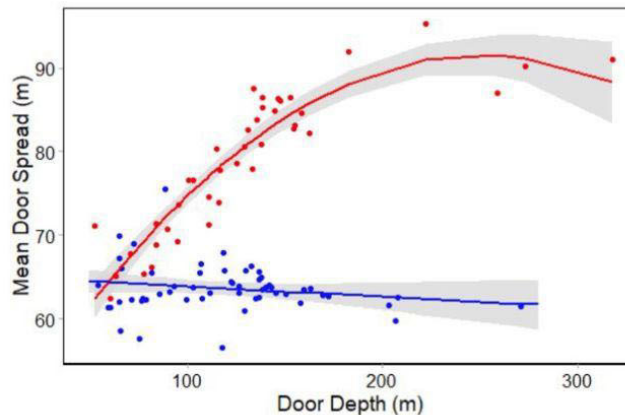
Fréchet 2000



Weinberg and Kotwicki 2015



ICES 2022 (IBTSWG) Norwegian Q3 IBTS



Motivation for current work

- Increasing international interest in restrictor rope impacts
- Restrictors have been used in Norwegian surveys
- Discussed in recent (2022) ICES workshop on the development of the new IBTS GEAR

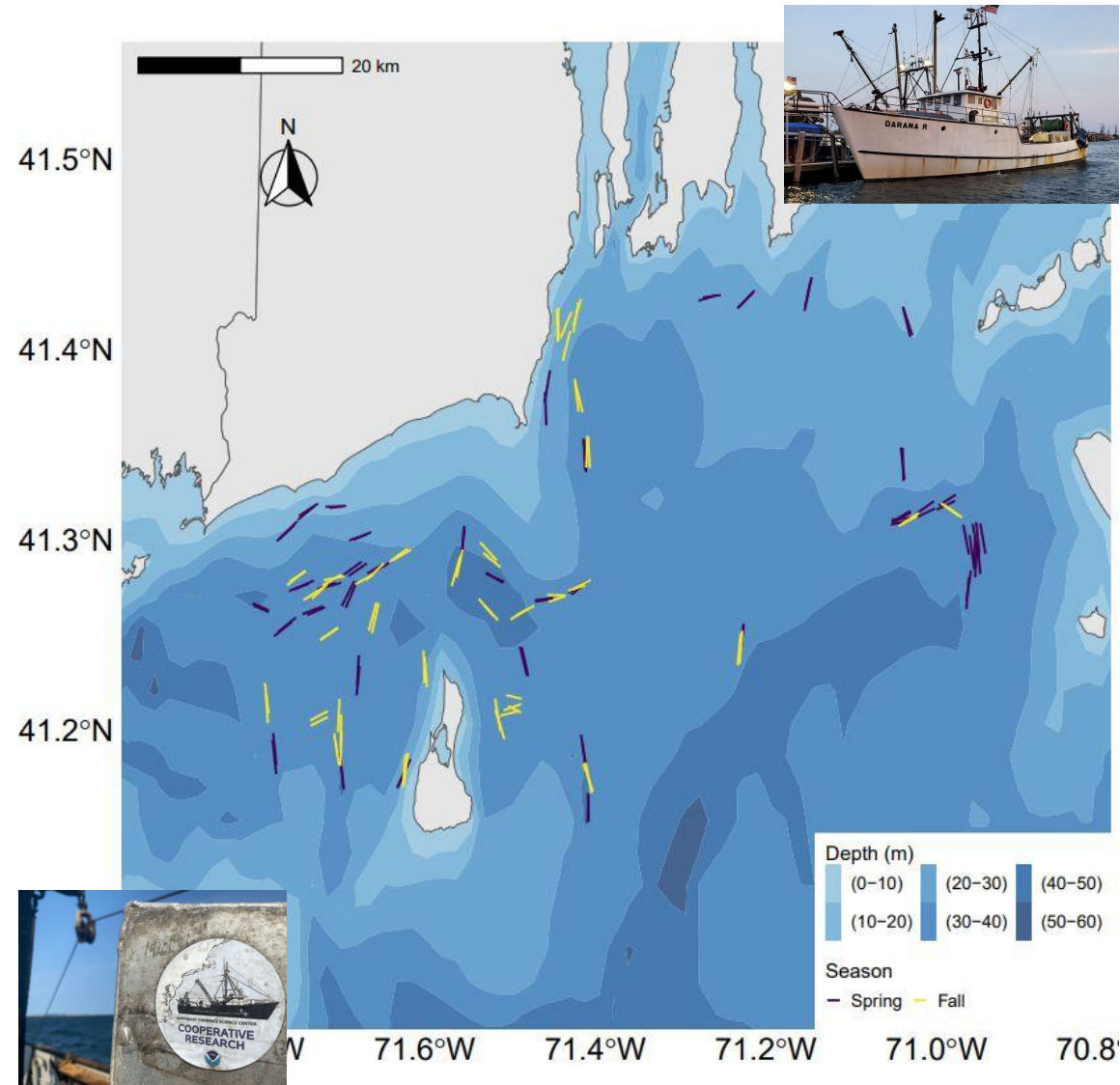


4.4.3 Final proposal

From a technical point of view, the use of restrictor ropes is advised, as it stabilises the net geometry. Technical solutions for handling the ropes should be found on a ship-by-ship basis. Additional data exploration may be done, based on existing data (Norway), or by new data collection, especially in shallower areas. **Furthermore, an improved knowledge of whether a restrictor rope affects the catch rates of various fish species is also required.**

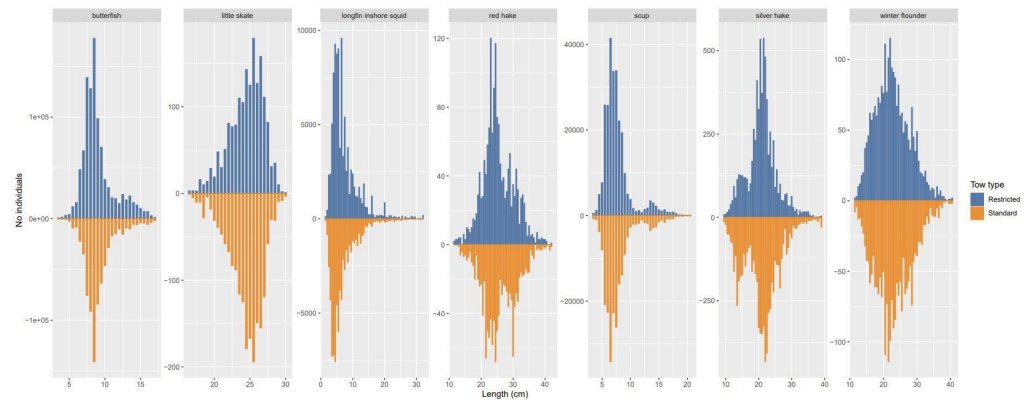
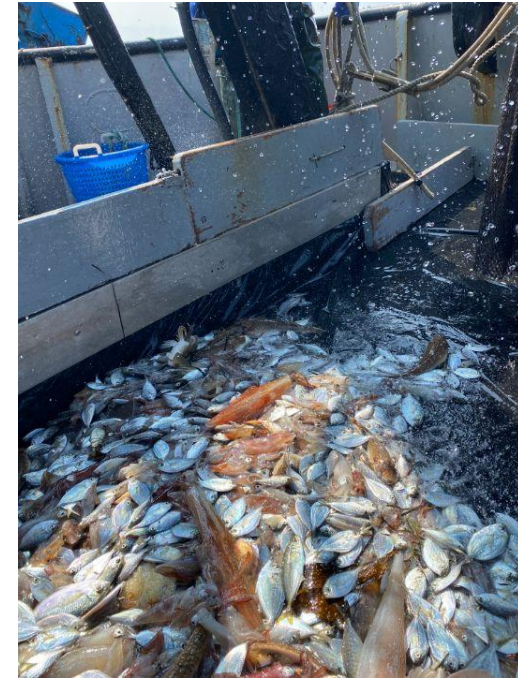
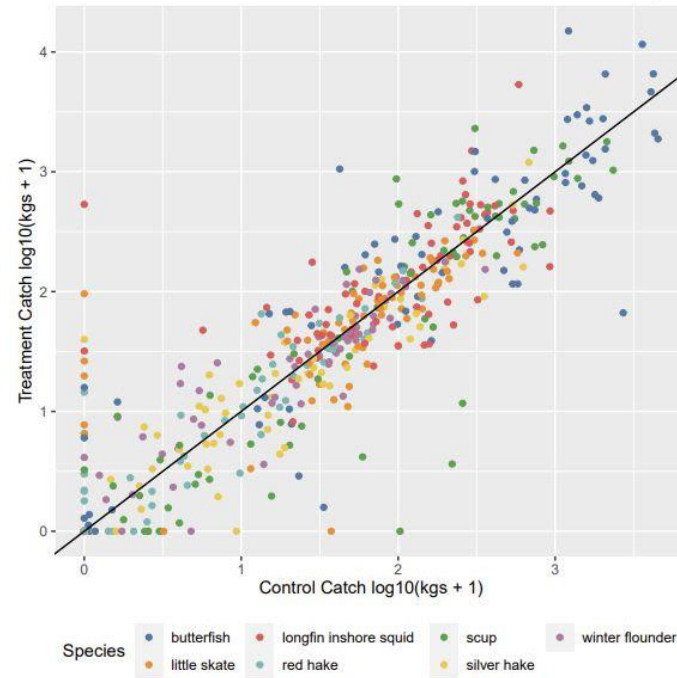
2022 NTAP Experiment

- Experimental work on F/V Darana R to explore restrictor catches
- In 2022, two seasons (spring and fall), ~140 tows or ~70 comparisons
- For seven most commonly caught species we:
- Compared aggregate catches (log catches relative to 1:1)
- Inspected catch-at-length in each pair of tows fit with binomial GAM



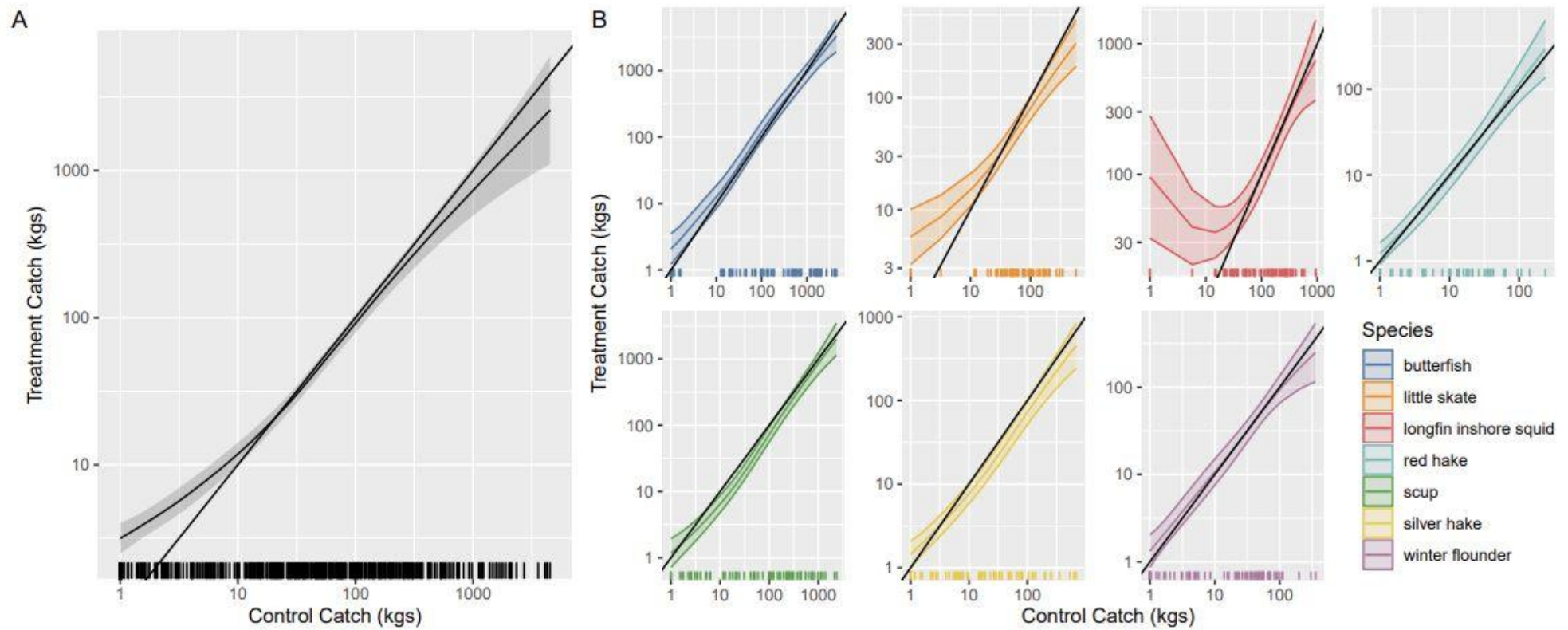
Results

- Subtle differences in gear metrics (which we expected based on the depths sampled)
- Limited impacts of the restrictor rope on aggregate catches of seven species
- Limited impact on the catch-at-length for seven species as well



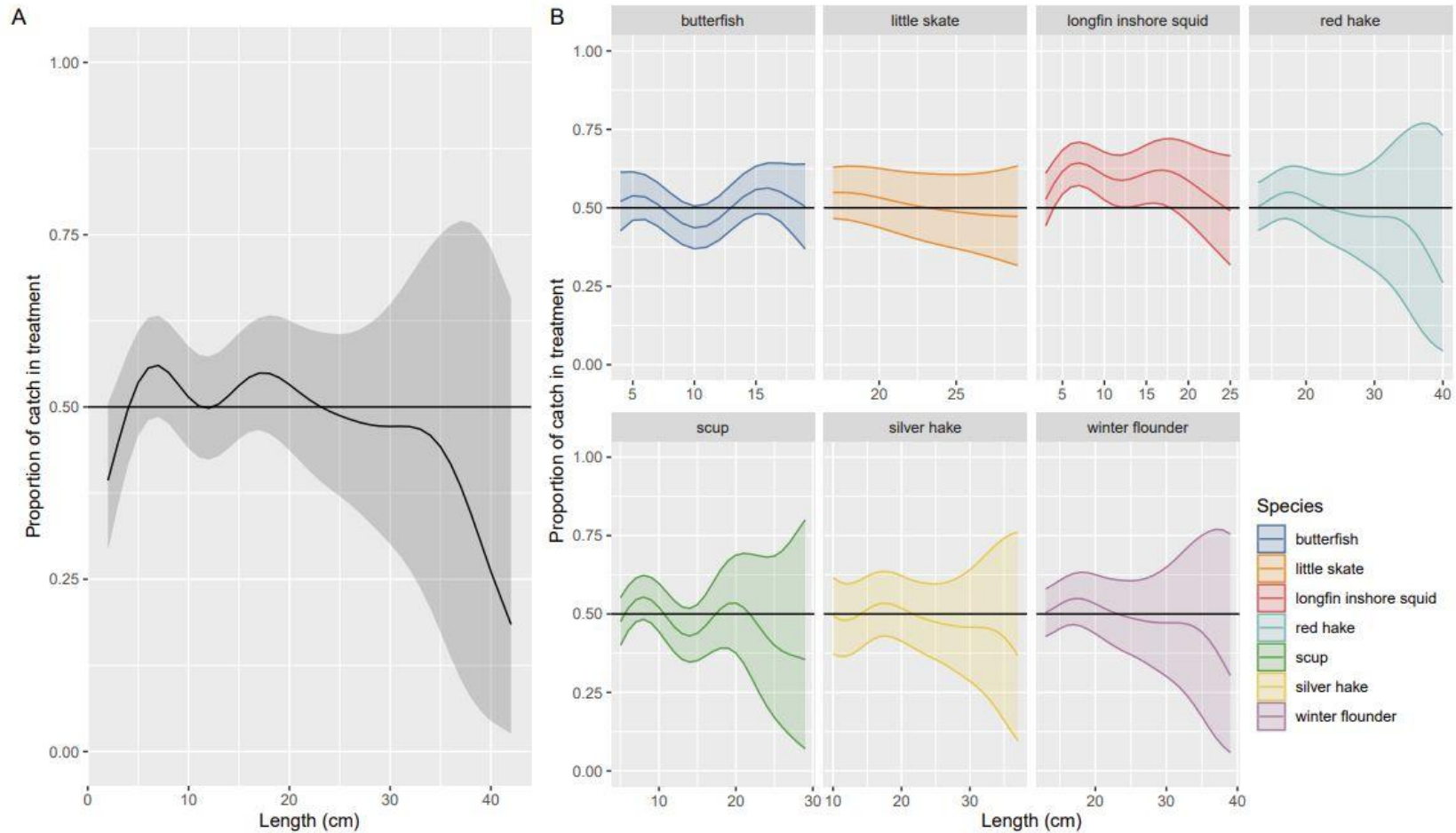
Model outputs

- Limited impacts of the restrictor rope on aggregate catches of seven species



Model outputs

- Limited impact on the catch-at-length for seven species



Conclusions

- We observed limited impacts of the restrictor rope on catches
- Worth considering the positive impacts of the restrictor on standardizing gear performance when surveys in wind energy areas are being developed
- Specifically, in scenarios where standardizing net geometry is likely to be more important (e.g., when a large depth range is covered by a survey, or multiple survey vessels may be used)
- In the context of offshore wind, this could potentially help improve consistency across wind developments and help researchers identify cumulative effects
- One caveat is that we do not have enough data to definitively say that there is no effect of the restrictor rope for all species, but we have some confidence based on the diversity of species sampled through this research



Next steps

- Drafting manuscript for peer review
- Shared with NEFSC/VIMS/Darana R
- Editing and hope to get to full panel soon
- Will likely target fisheries journal such as ICES Journal of Marine Science
- Present work to NEFMC/MAFMC as next step?



Questions?



References:

- Fréchet, A., 2000. Multiple otter-trawl calibration for the sentinel surveys in the northern Gulf of St. Lawrence. ACTES DE COLLOQUES-IFREMER, pp.37-45.
- ICES. 2022. Workshop on the Further Development of the New IBTS Gear (WKFDNG). ICES Scientific Reports. 4:18. 46 pp. <http://doi.org/10.17895/ices.pub.10094>
- Rose, C.S. and Nunnallee, E.P., 1998. A study of changes in groundfish trawl catching efficiency due to differences in operating width, and measures to reduce width variation. Fisheries Research, 36(2-3), pp.139-147.
- Weinberg, K.L. and Kotwicki, S., 2015. Reducing variability in bottom contact and net width of a survey trawl by restraining door movement and applying a constant ratio of warp length to depth. Fishery Bulletin, 113(2).