BY-CATCH OF RAYS IN TRAWL FISHERIES FOR ATLANTIC SEABOB SHRIMP: HOW EFFECTIVE ARE TEDs AND BRDs?

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Background

Tropical shrimp trawling often causes unwanted by-catch of rays (Batoidea). Several ray species occur on the IUCN Red List of Threathened Species.

Objective

Assess the effectiveness of commonly used gear adaptations in reducing ray by-catch: Turtle Excluder Device (TED) and By-catch Reduction Device (BRD)

Conclusions

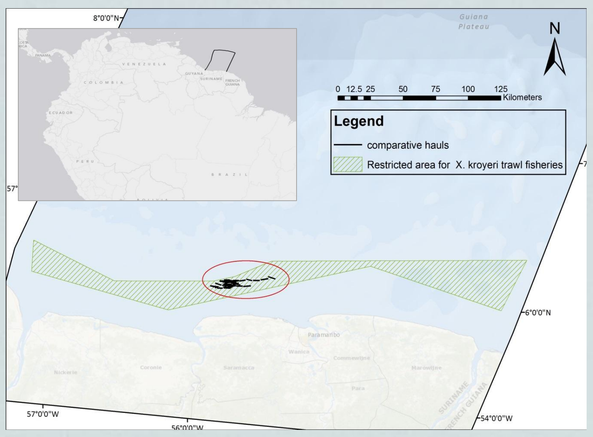
- TEDs (not BRDs) cause an overall 36% reduction in catch rates of rays
- Reduction is size-dependent: larger rays escape better
- Reduction-at-size is species-dependent
- Small sized rays are most abundant in the population and remain being captured

Discussion

Advice to fishery: test alternative TED with reduced bar-spacing to protect small sized rays

Data collection

- Suriname continental shelf
- Twin-rig bottom trawling for Atlantic seabob shrimp *Xiphopenaeus kroyeri*
- 65 simultaneous catch-comparison hauls
- ***test*-net: TED & BRD**
- ***control*-net: no TED, no BRD**
- Rays sorted from catch, identified, measured (disk width)

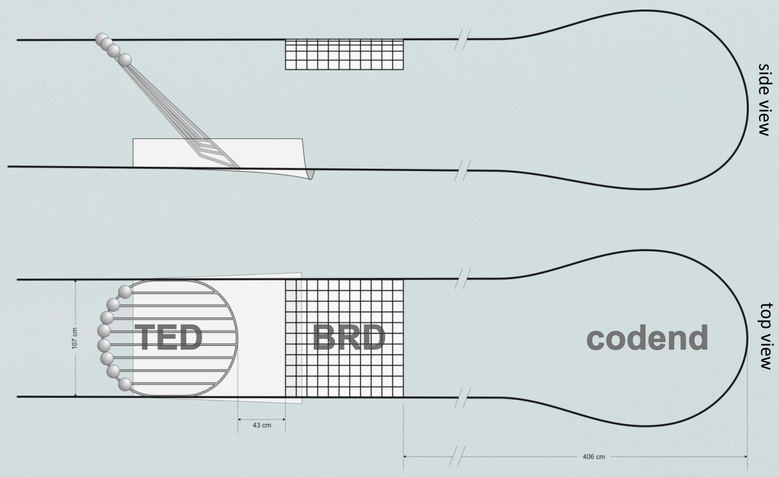


BY-CATCH REDUCTION DEVICE (BRD)

- Square mesh window panel
- 11 x 11 meshes
- 150 mm stretched mesh size
- Top of codend, behind TED

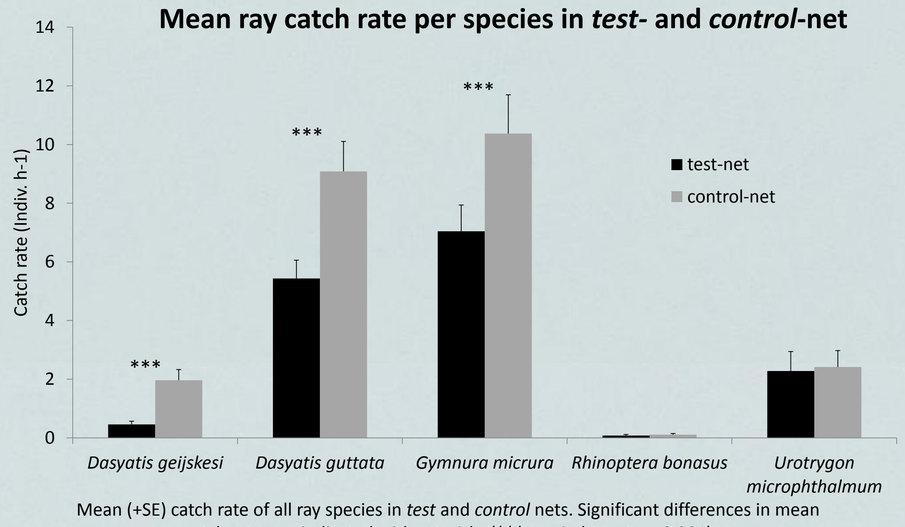
TURTLE EXCLUDER DEVICE (TED)

- Downward excluding type
- 100 mm bar spacing

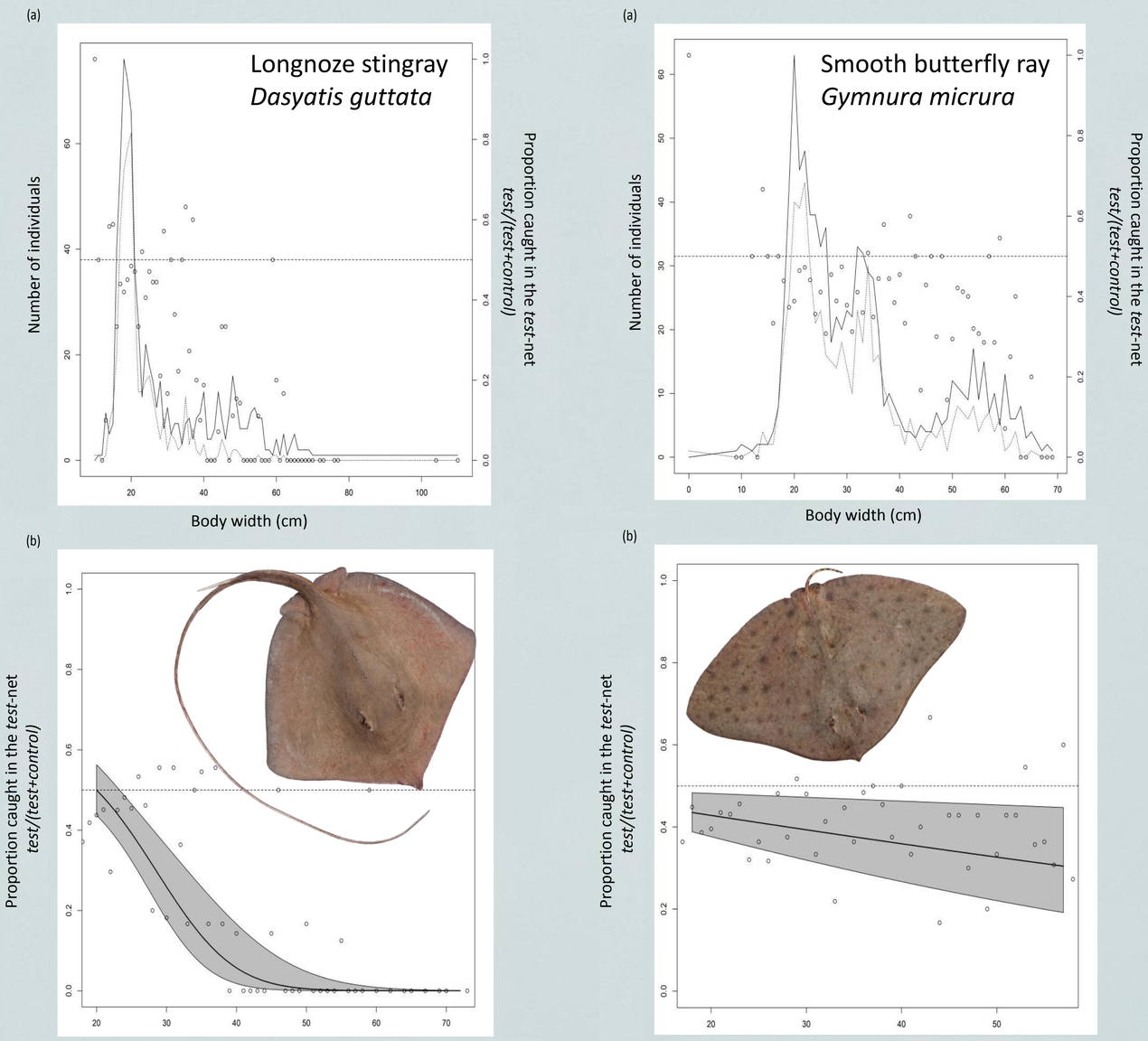


Codend in the *test*-net configuration with TED and BRD

Results



Mean (+SE) catch rate of all ray species in *test* and *control* nets. Significant differences in mean catch rate are indicated with asterisks (***; paried *t*-test; p<0.001)



(a) Pooled length-frequency distributions (solid line: *control*-net; dotted line: *test*-net) and the observed proportion (hollow dots) of the total catch caught in the *test*-net; **(b) GLMM modelled proportion of the total catches caught in the *test*-net**. Interpretation of (b): A value of 0.5 (dashed line) indicates an even split between the two trawls, whereas a value of 0.2 indicates that 20% of all rays at that body width were caught in the *test*-net and 80% were caught in the *control*-net.

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