



# Balancing Conservation and Catch: ETP Bycatch mitigation in a Tropical Bottom Trawl Fishery with Flexible Grids

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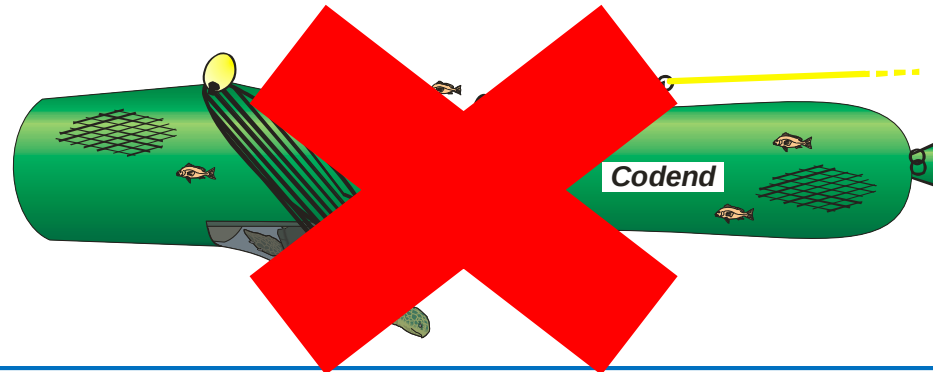
# Demersal finfish trawling in Suriname

- Suriname EEZ
- North Brazil Shelf LME
- 25-45m depth
- Ca. 30 vessels
- Otter trawling (single and twin-rig)
- 12,000 tons/year
- Demersal finfish: croakers, weakfish, snappers, etc. (>40 species landed)



# ETP bycatch challenges

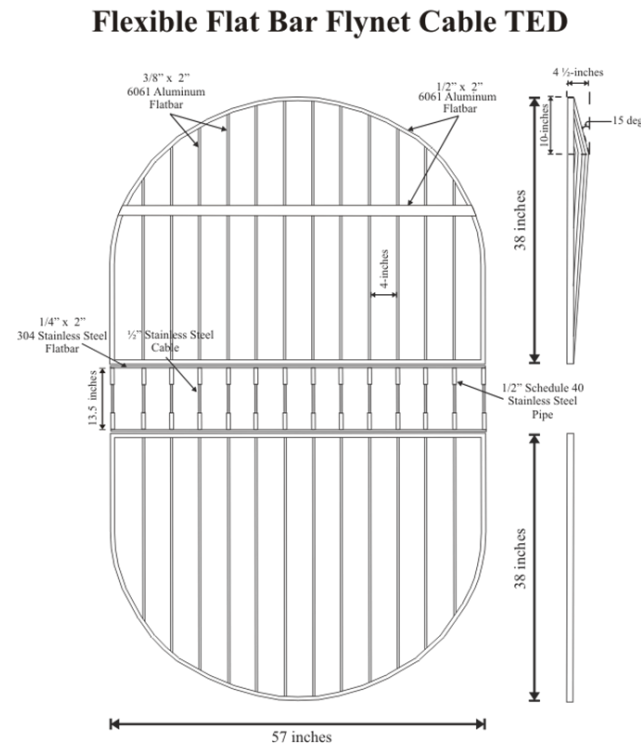
- ETP = Sharks, rays, turtles
- ETP bycatch reduction objective of FMP
- Use of net reel: shrimp TED technology not applicable



# ETP bycatch mitigation history

## 2011: FFF TED trials (WWF)

- Most promising option among various ‘flexible grids’ considered for US croaker fishery
- Sea trials not satisfactory: handling of large and heavy TED onto net reel proved a safety hazard



# ETP bycatch mitigation history

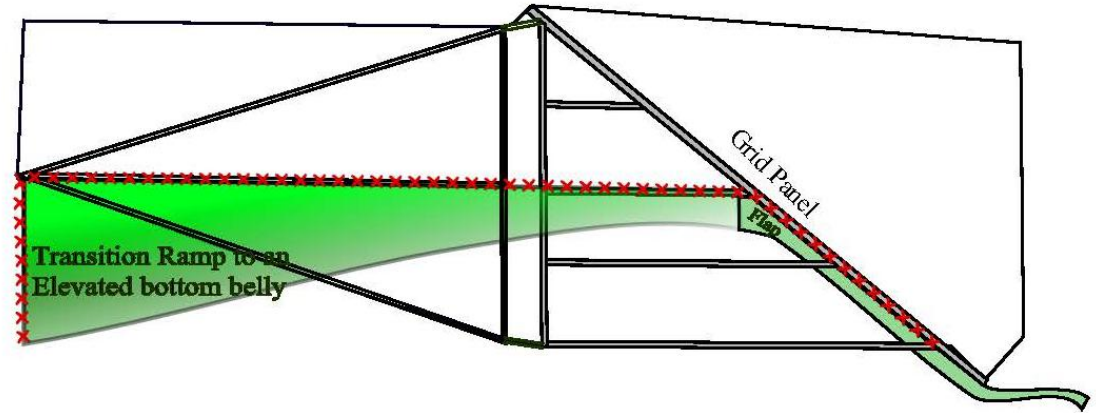
## 2017 – 2021: cable grid trials (REBYC-II LAC)

- Fully flexible design with stainless steel cable
- Testing of 5” and 7” bar spacing prototypes
- Bottom- and top-excluding configurations
- Spectacular ETP bycatch reduction
- Ca. 30% loss of commercial catch
- Important lessons learned on grid design and functioning



# Improved grid design

- Bottom-excluding
- 6" bar spacing
- Low angle (30 degrees)
- 'Elevated bottom belly'
- Double backstraps to maintain flat grid



# 2025 trials

## 2025: trials with improved grid (REBYC-III CLME+)

- Grid evaluated in 6 commercial fishing trips
- 28 hauls with full data collection
- Paired (twin-rig) trawling
- Counts of all ETP species
- Weights of retained catch
- Grid angle measurements



# Results

## Handling of grid

- grid winds onto net reel without issues
- 'set and forget'



## Grid angle

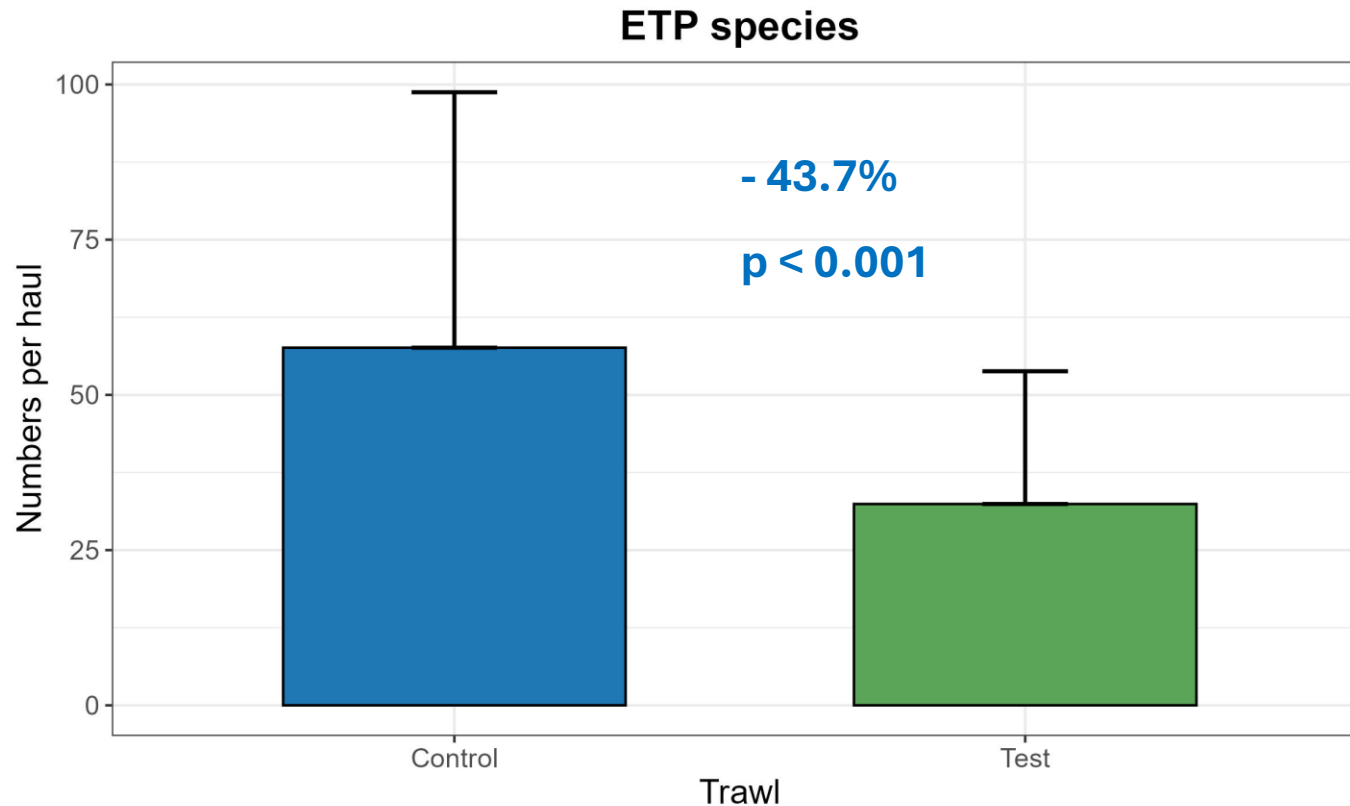
- Tilt sensor attached to grid
- Consistent  $28 \pm 0.9$  degree angle



# Results

## ETP bycatch

- Sharks, rays and sea turtles reduced by **44%** in numbers



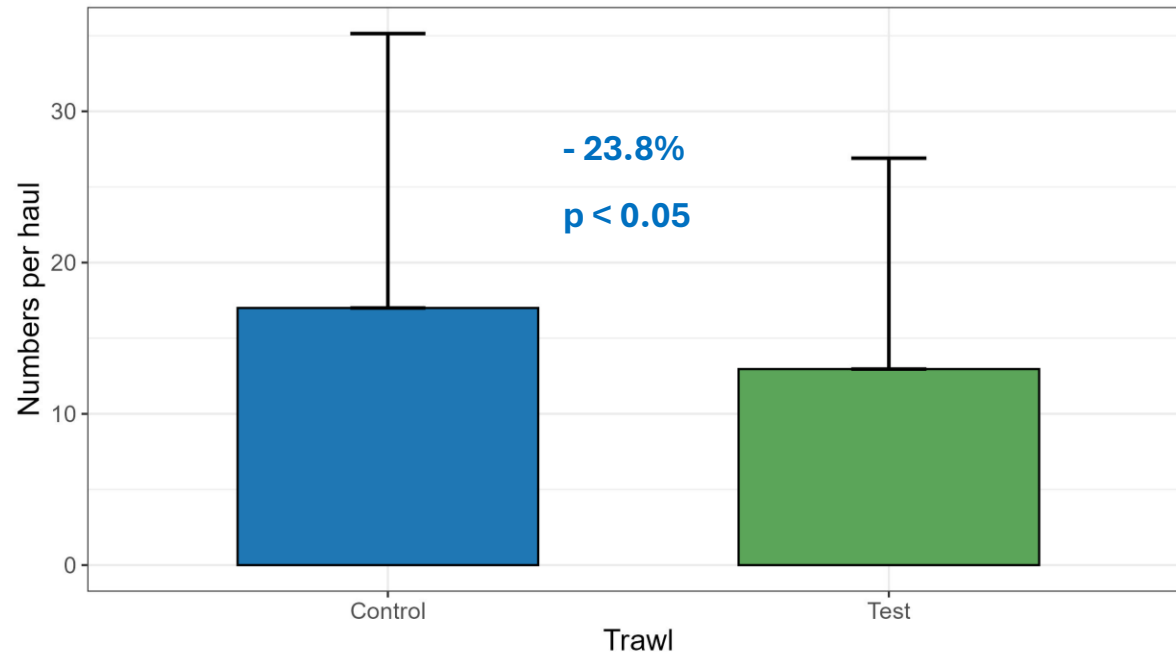
# Results

## ETP bycatch

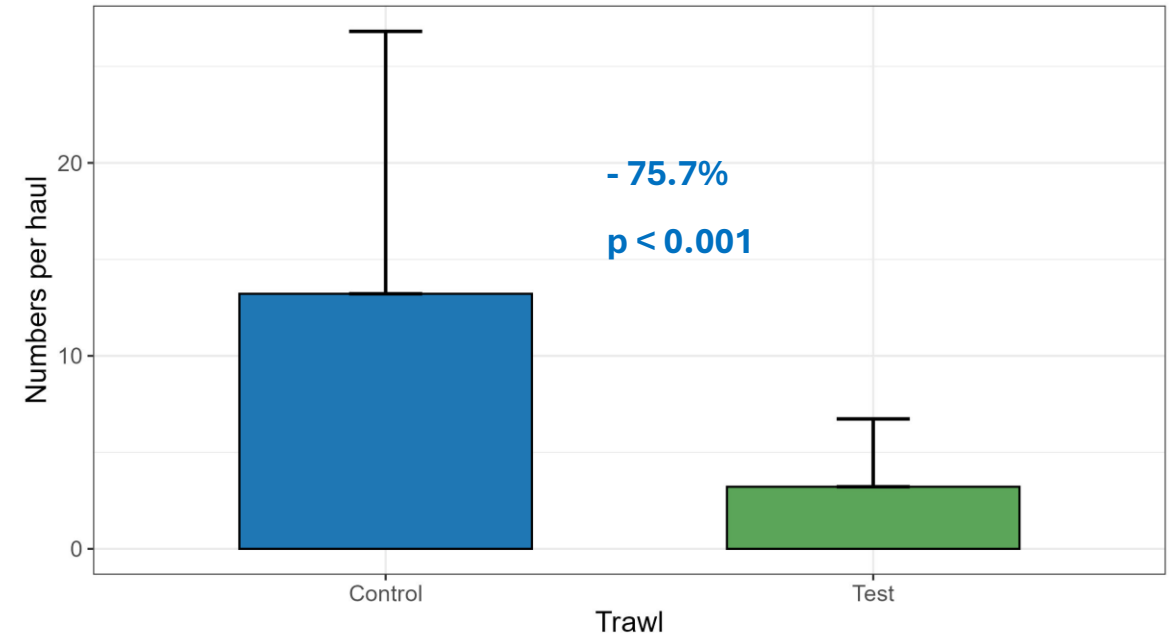
- Reduction is species dependent



Smalleye smooth-hound



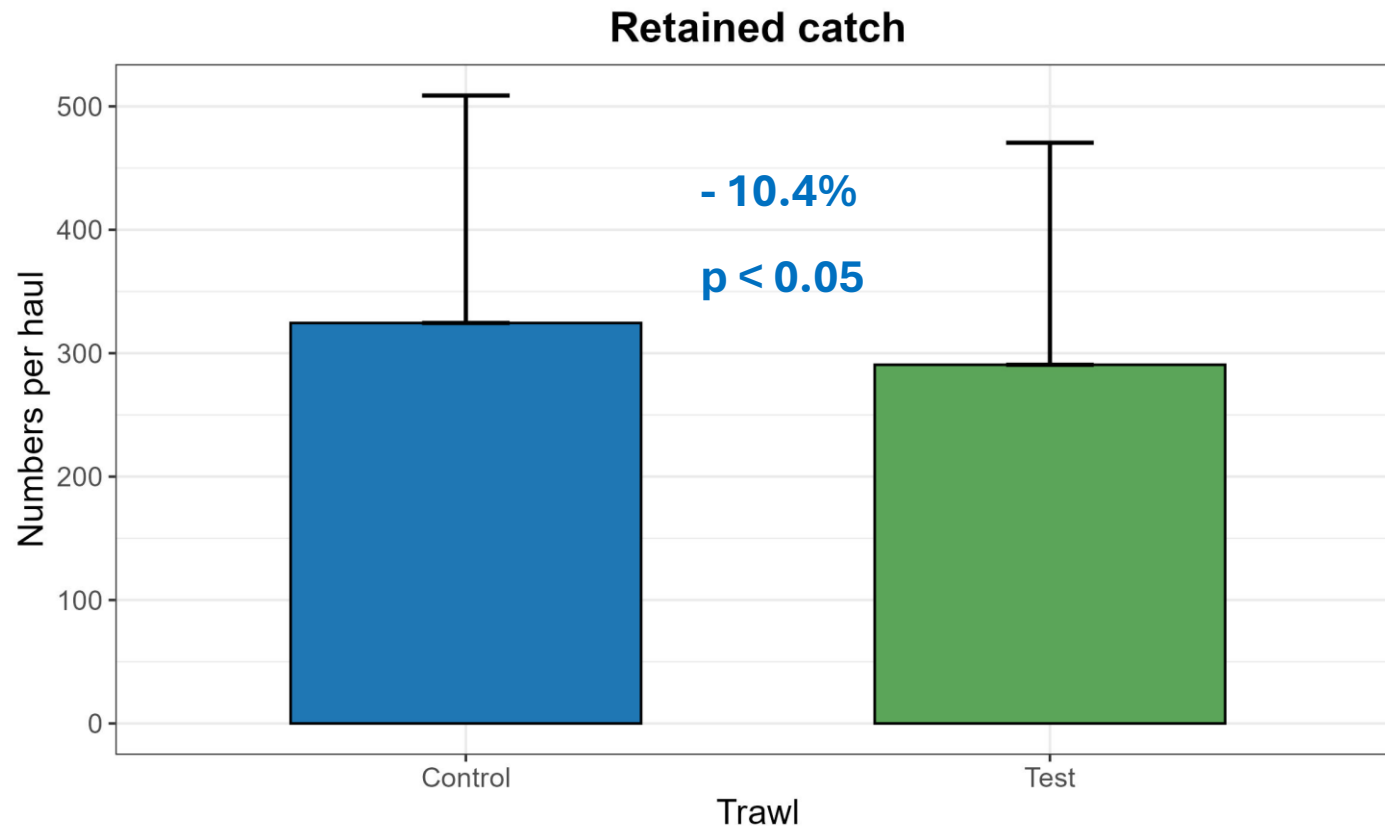
Longnose stingray



# Results

## Retained catch

- Retained commercial catch reduced by **10%** in weight



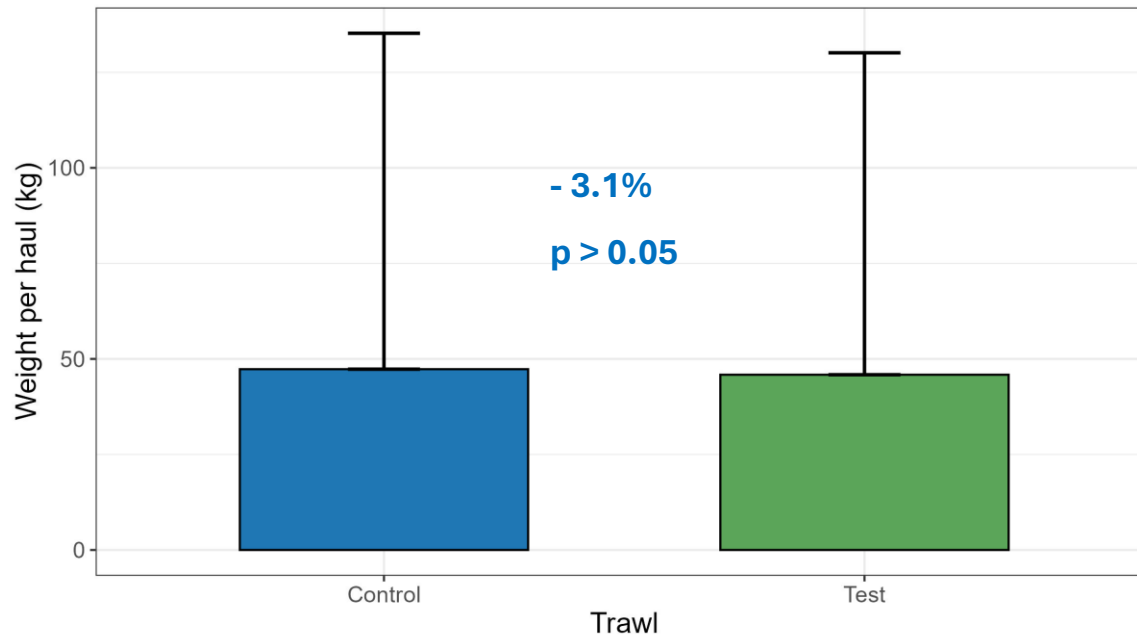
# Results

## Retained catch

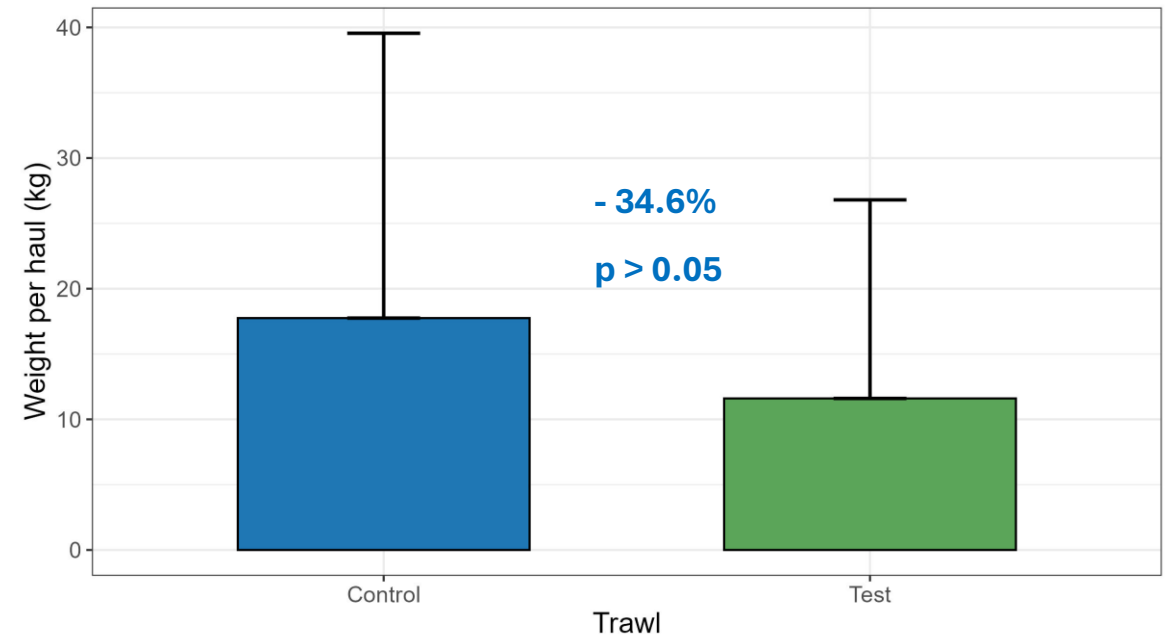
- Reduction is species dependent



Jamaica weakfish



King mackerel



# Win or Fail?

- 10% target catch loss 'not acceptable' for industry
- Further improvements to grid:
  - Fish herding in front of grid: lost on haulback?
- Can we do better?
  - Is better performance realistic? Or should we accept this as a cost of ETP bycatch reduction?
- Where to direct our efforts and resources:
  - Further R&D
  - Outreach and extension: shifting industry mindset?
  - Capacity building: train net builders





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# Thank You

