



# Electronic Monitoring Systems: The OPAGAC Experience

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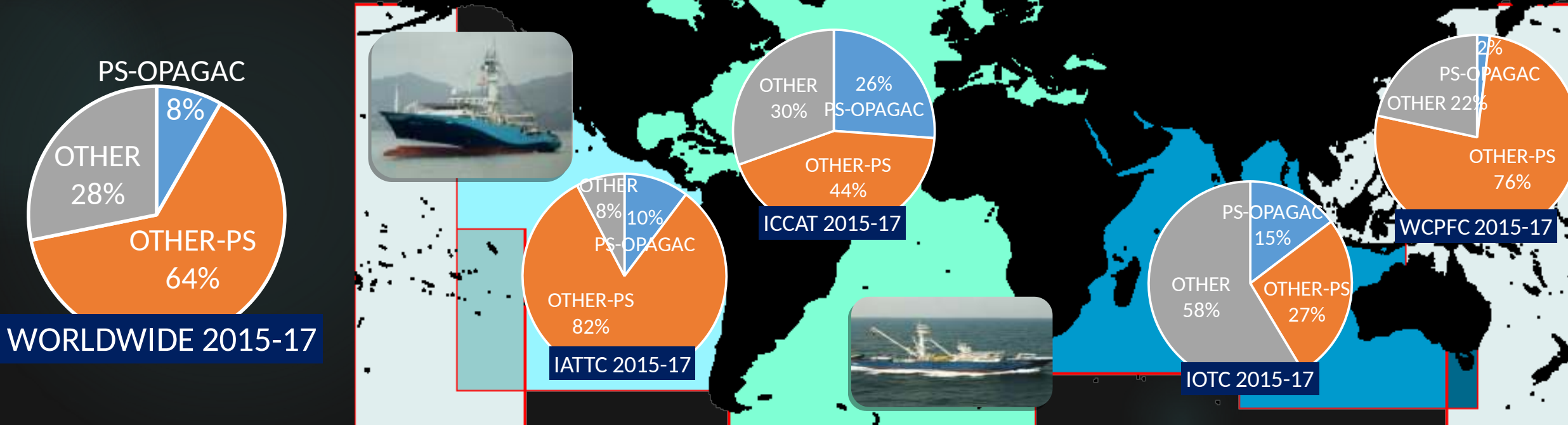
# OPAGAC In the World





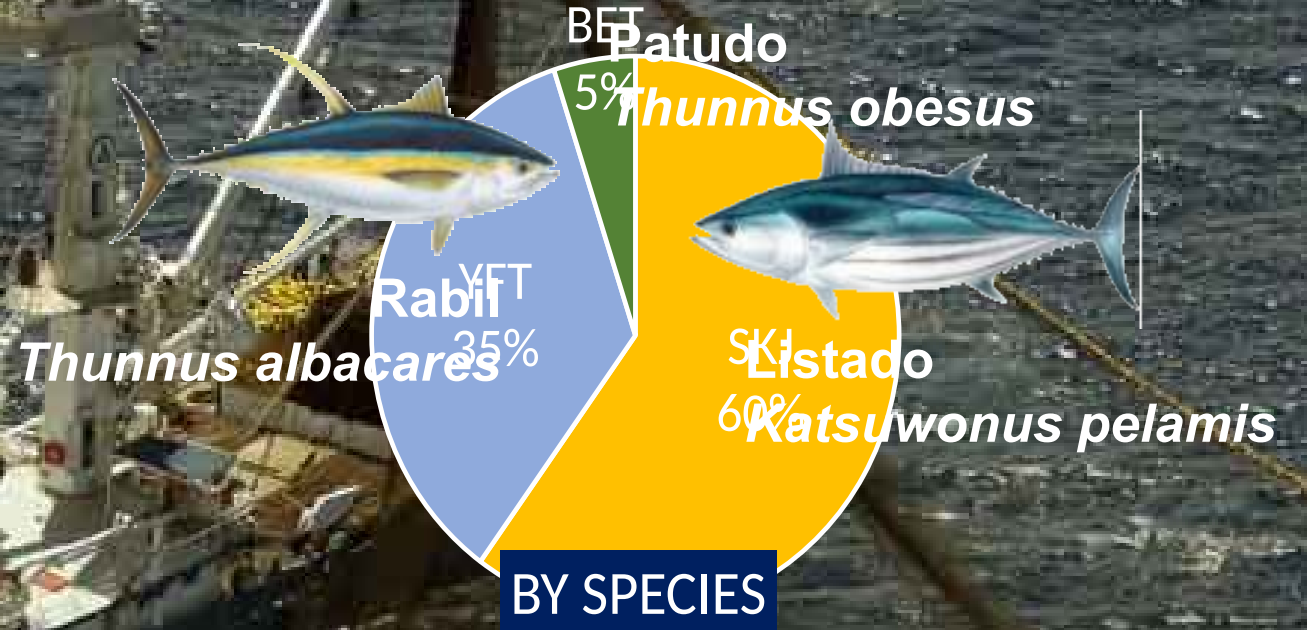
# OPAGAC in the World

- **OPAGAC: 8 Fishing Groups (some integrated), 47 Seinners**
- **≈380,000 t Tropical Tunas (8% del total) in the three oceans**
- **Tropical tunas as target species (SK & YF) for canning**
- **All vessels are implementing a Fishery Improvement Project (with WWF)**
- **All vessels have the Tuna from Responsible Fishing AENOR Certification**

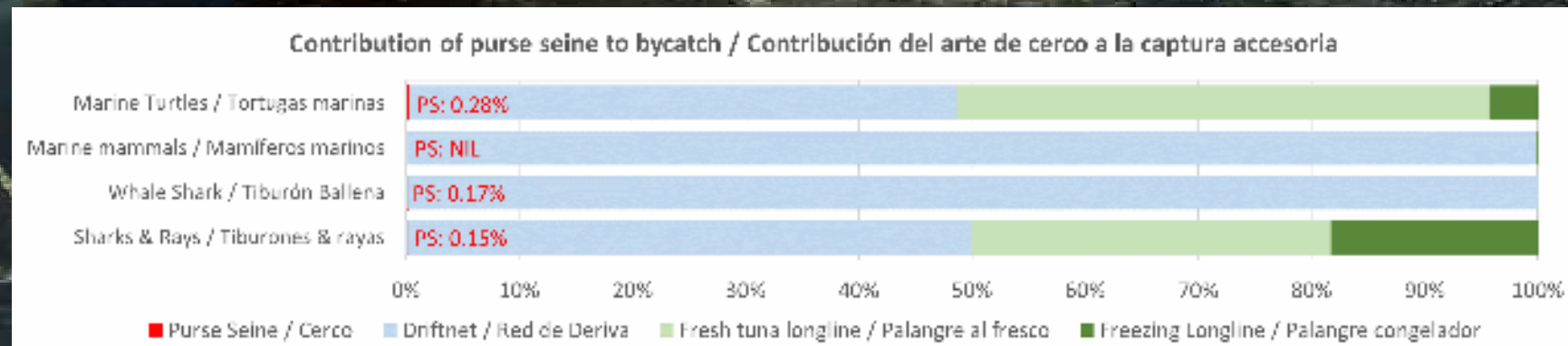


# The Fishery

Target species make over 95% of total catch



Bycatch makes 2-5% of total PS catch & less than 1% of total bycatch (Indian Ocean: all fisheries combined)







# Electronic Monitoring System





# Technical Standards

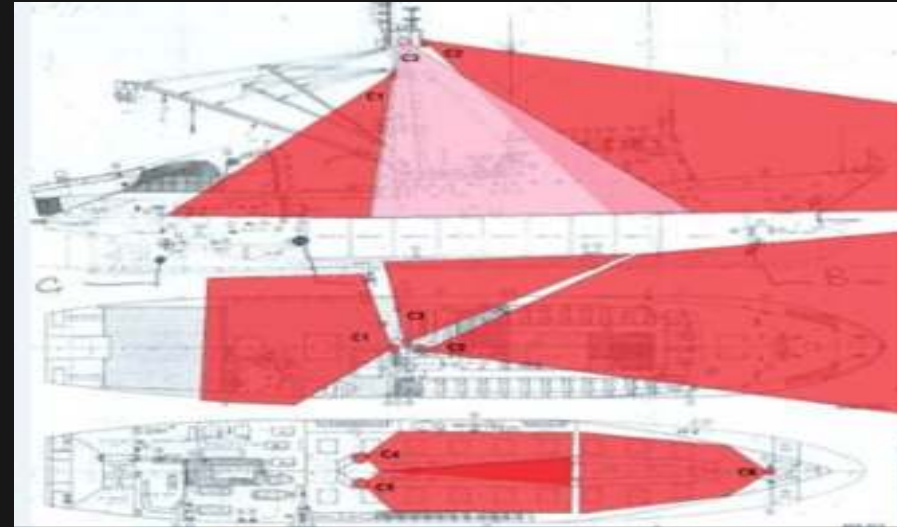
## Electronic Monitoring / CCTV Key Elements to consider

- ✓ Integration with VMS
- ✓ High Value Information (not just videos)
- ✓ Data Integrity (against manipulation)
- ✓ Data Confidentiality
- ✓ Encryption
- ✓ Passwords for decryption of HDD through Satellite
- ✓ Real-Time Alarms through Satellite
- ✓ HD cameras
- ✓ Robustness, tamper-proof and sea environment design

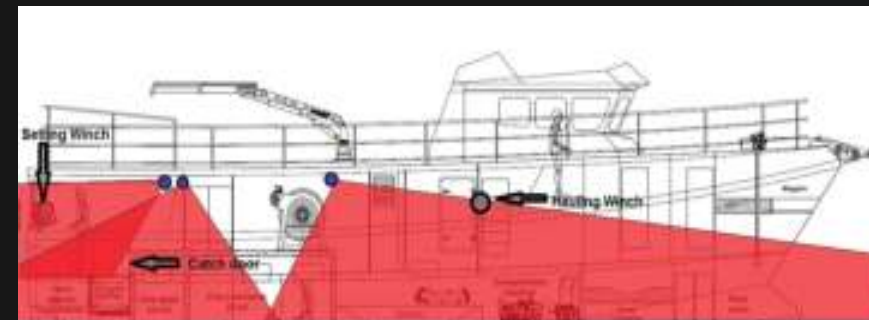


# CUSTOMIZED CAMERA COVERAGE

- Tailor made design for each vessel:
  - Maneuver type
  - Length, equipment
  - Fishing deck type



Freezer Purse-seine, 80m length, 6 cameras



Fresh fish long liner, 20m length, 3 cameras

# EMS In a Nutshell



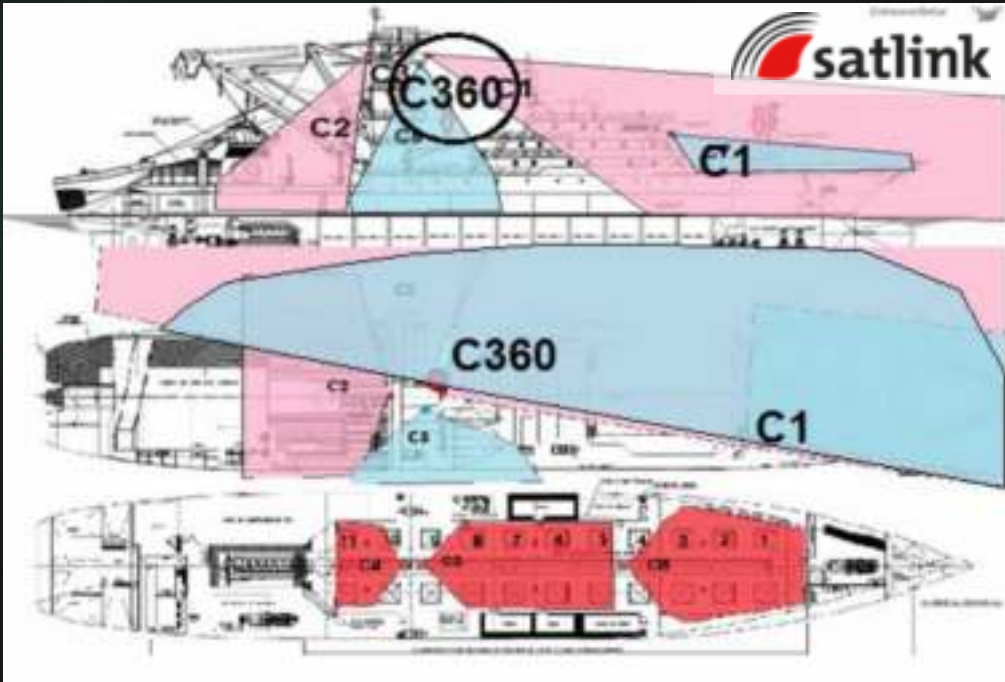
Code of Good Practice



100% Fishing and loading activities covered through observers (EMS + Human)



# EMS at work



Dot description	Count
<input type="radio"/> <input type="checkbox"/> [Blue dot]	0
<input type="radio"/> <input type="checkbox"/> [Green dot]	0
<input type="radio"/> <input type="checkbox"/> [Red dot]	0
<input checked="" type="radio"/> <input checked="" type="checkbox"/> YFT	13 13



**TARGET SPECIES**

Dot description	Count
<input type="radio"/> <input checked="" type="checkbox"/> BET	9
<input type="radio"/> <input checked="" type="checkbox"/> SKJ	13
<input type="radio"/> <input type="checkbox"/> [Red dot]	0
<input checked="" type="radio"/> <input checked="" type="checkbox"/> YFT	4 26



**RETAINED BYCATCH  
&  
DISCARDS**



A high-contrast, black and white image of a large cargo ship at sea. The ship's deck is visible, showing various structures and equipment. The ship's name 'PROSPERITY' is visible on the hull. The image is rendered in a high-contrast, almost binary style, with the ship appearing as a series of white lines and shapes against a black background.

# What EMS Does For Us

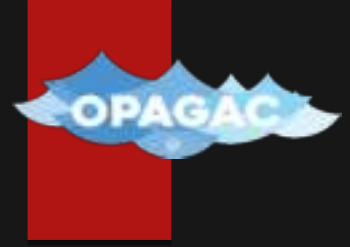


# Since 2015 Code Good Practices

- 100% observer coverage
- Human Observers and EMS verify conformity with OPAGAC's Code of Good Practice, intended to:
  - Full accounting impacts from the OPAGAC fleet
  - Reduce mortality of sensitive bycatch species (safe release)
  - Reduce environmental impacts of FADs (non-entangling)



# EMS Strengths



- **Transparency:** Human observers are not always accurate (purposely or not); option for third party (Government) verification CCTV images;
- **Adaptation:** All ships, large or small, can be covered and Fishing activities can be observed in full (24/7/365 and never sleeps!);
- **Human rights watch:** Fishermen and observers protection and behaviour enhancement;
- **Cost-Effectiveness:** The cost of EMS per trip, including video analysis, is lower than human observation and technological improvements will lead to further reduction in video-processing time & cost;
- **FULL DOCUMENTED CATCH THAT A CERTIFIED FISHERY SHOULD HAVE!!**



The background of the slide is a photograph of a large quantity of fresh fish, likely tilapia, piled together. The fish are silvery and appear to be in a market or processing area. The image is slightly blurred and has a blueish tint. A semi-transparent dark grey rectangle is overlaid on the center of the image, containing the text "ACTIONS NEEDED".

# ACTIONS NEEDED

# TUNA RFMO observer requirements



UNEVEN OBSERVER COVERAGE

GEAR DEPENDENT:

100% PS vs 5-10% LL or 0% rest of gears

THAT LEADS TO MAJOR DATA DEFICIENCIES

POOR STOCK ASSESSMENT ESTIMATES

FLAGRANT LACK OF COMPLIANCE



# TUNA RFMO observer requirements



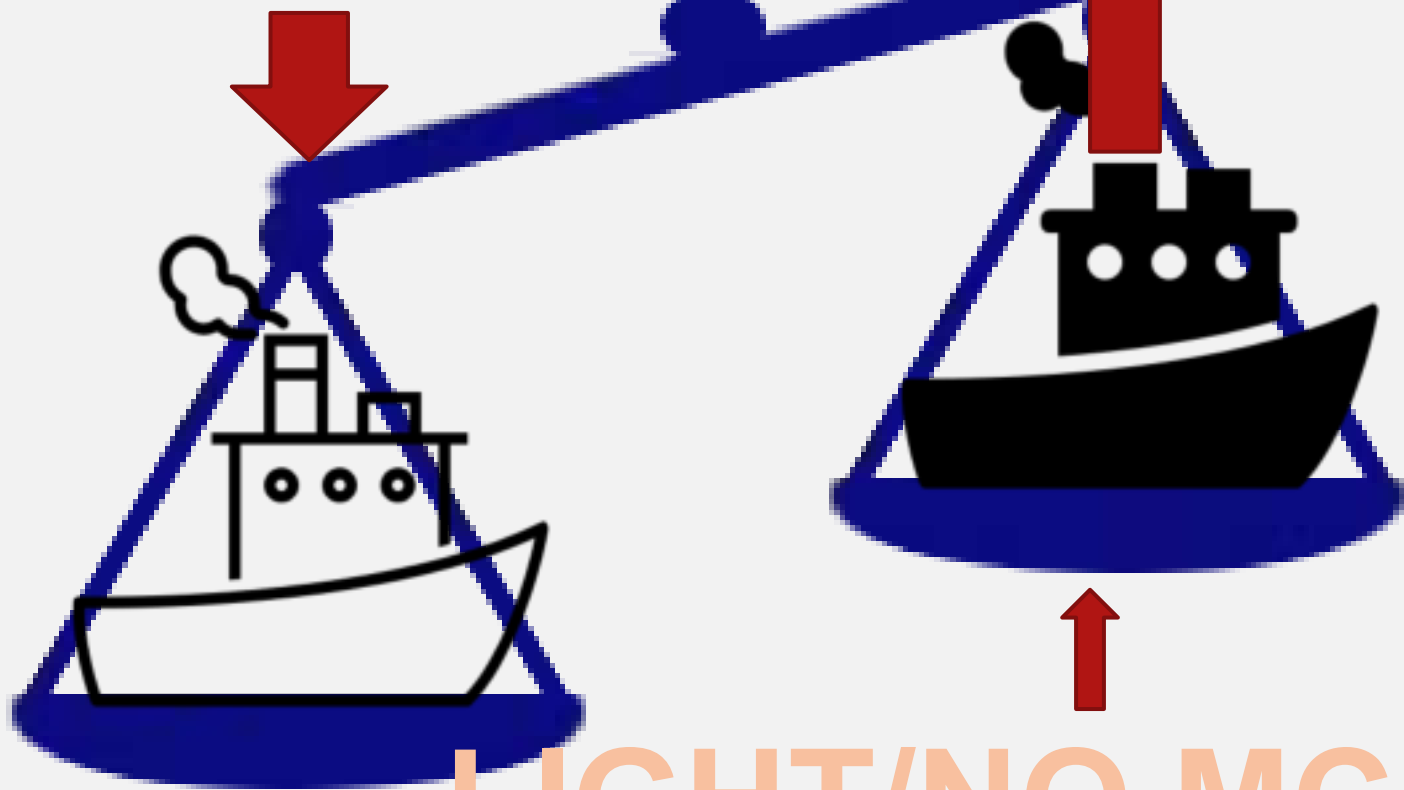
AT SEA TRANSHIPMENT ALLOWED w/ OBSERVERS ON CARRIERS

MOST OF VESSELS MAKING AT SEA TRANSHIPMENT **HAVE 0%OBSERVERS!!!**

FIRST OPTION: BAN AT SEA TRANSHIPMENT

ALTERNATIVE: EMS SHOULD BE COMPULSORY ON VESSELS ALLOWED TO MAKE AT SEA TRANSHIPMENT

STRONG MCS



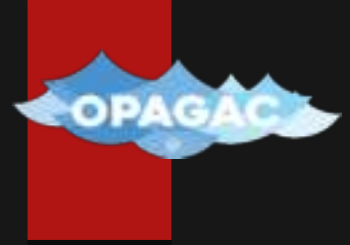
LIGHT/NO MCS

IUU FISHING

UNBALANCED  
MCS  
LEGISLATION IN  
A GLOBAL  
MARKET =  
UNFAIR  
COMPETITION  
AND IUU  
FISHING



# EMS FEASIBLE SOLUTION

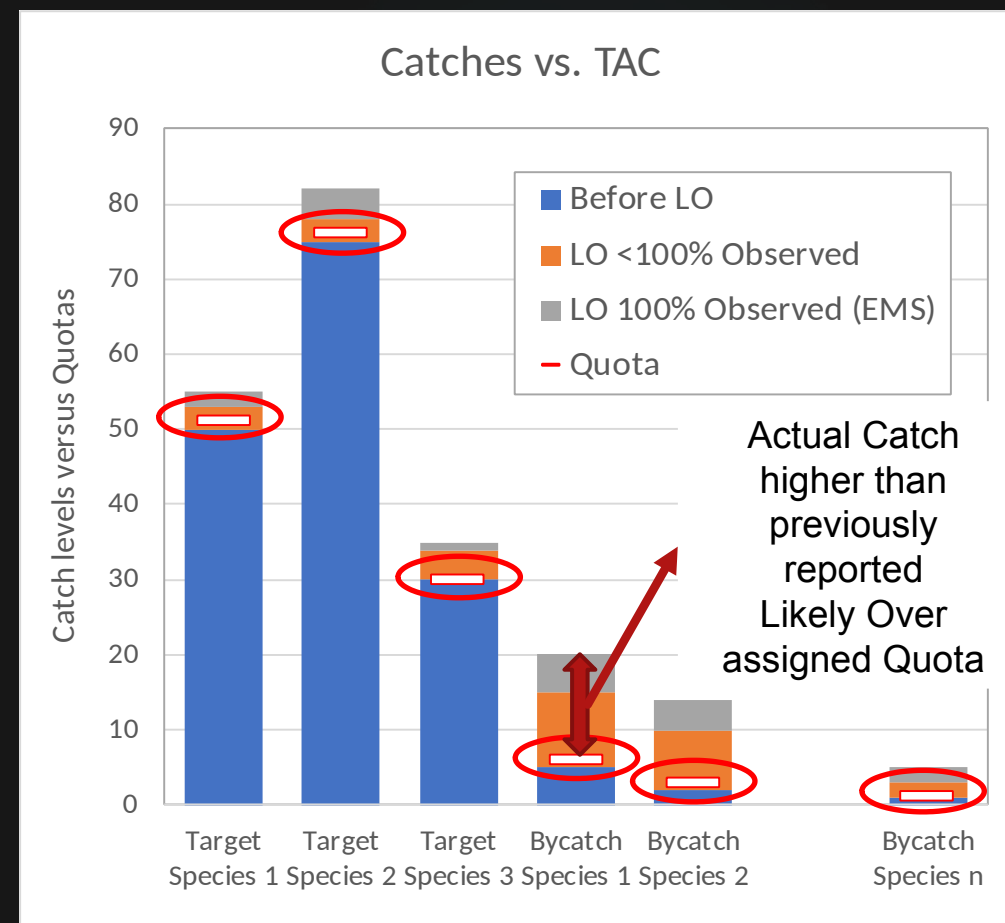


- HUMAN RIGHTS AT SEA WATCH
- IMPROVE COMPLIANCE
- IMPROVE FISHERIES DATA ON TARGET AND BYCATCH
- THEREFORE IMPROVE STOCK ASSESMENT ESTIMATES
- TACKLE IUU ACTIVITIES
- AT SEA TRANSHIPMENT CONTROL
- LEVEL PLAYING FIELD

# A likely Future

## A changing picture of impacts through EMS $\Rightarrow$ Change Management Regime ?

		Target Species Retained	Target Species Discarded	Bycatch Retained	Bycatch Discarded	Interactions
Before Landing Obligation		Green	Yellow	Green	Red	Red
Landing Obligation Now	<100% Activity Observed	Green	Yellow	Green	Yellow	Yellow
Landing Obligation [Future?]	100% activity observed (human + EMS)	Green	Green	Green	Green	Green



- ➔ Higher catches than actually reported (mainly bycatch)
- ➔ Change to status of stocks  $\Rightarrow$  Change of TAC
- ➔ Need to reallocate TAC by fishery (relative stability ?)
- ➔ Need for Alternative Management: Quotas set on many species lead to choke species
- ➔ Management shall be integrated (for as many species subject to quota as required for each fishery)



# EMS FEASIBLE SOLUTION

- **FOCUS TO INTRODUCE EMS ON:  
HUMAN RIGHTS WATCH TOOL  
NEW CONTROL REGULATION  
RFMO MCS REQUIREMENTS  
TRANSHIPMENT OPERATIONS  
FISHERIES CERTIFICATION  
REQUIREMENT**



Thanks For Your Attention

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<http://opagac.org/en/>

