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Preliminary results of bycatch ratio, catch rates and species CPUE distributions of bycatch of sharks in the pelagic longline fishery based in Reunion Island

Bach P., Romanov E., Rabearisoa N., Sharp A., Lamoureux J-P

Data analysed are collected in the frame of the observer program of the longline fishery based in La Reunion supported by E.U. funds allocated to implement the “Data Collection Framework” (Council Regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy).



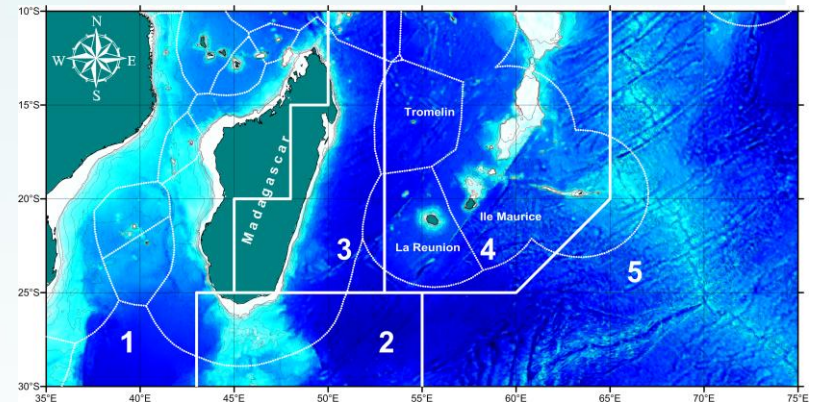


DATA ANALYZED

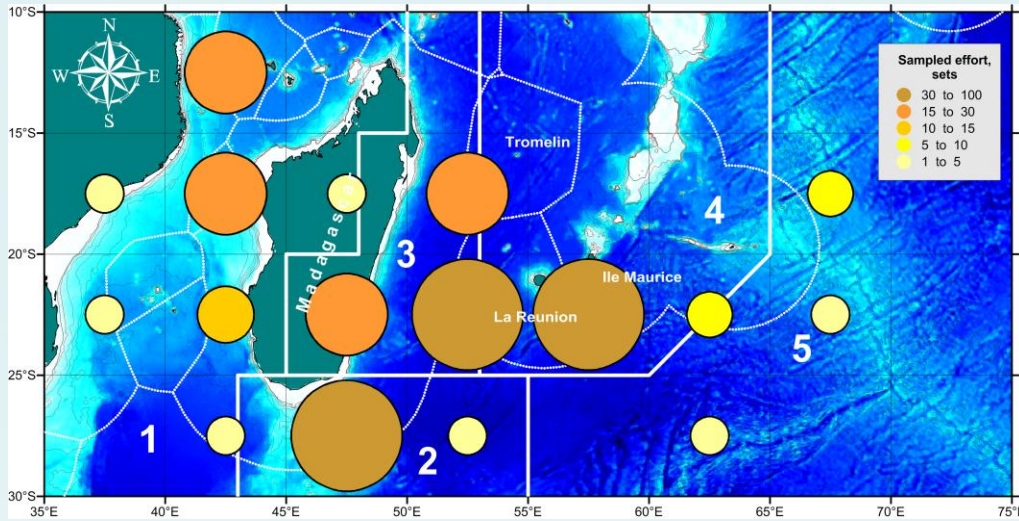
- Observer program SEALOR started in 2008 (Bach et al., 2008 - IOTC/2008/WPEB/WP13) – **(55% of the dataset)**
- Self-reporting project started in 2011 to cover fishery activities of smallest boats of the fleet – **(45% of the dataset)**
- Period : 2009 - 2011

Geographical stratification

Geographic strata	Name	Code
1	Mozambique Channel	MOZC
2	South of Madagascar	MSOUTH
3	East of Madagascar	MEAST
4	Reunion-Mauritius and shoals	RUN
5	Eastern Zone	FEAST

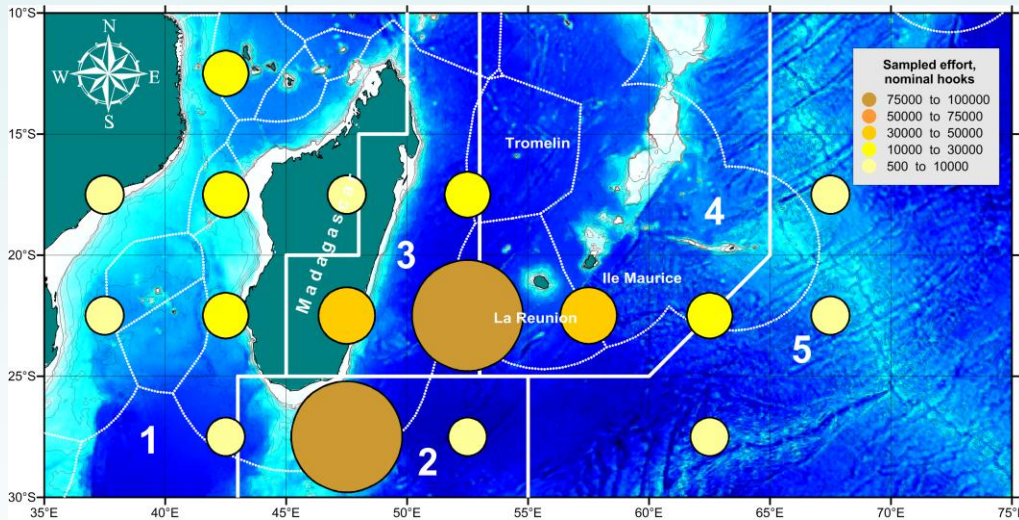


DATA ANALYZED



N. Sets = 318

Number of sets



N. Hooks ~ 357000

Fishing effort

DATA ANALYZED

List of species reported by observers and the self-reporting project

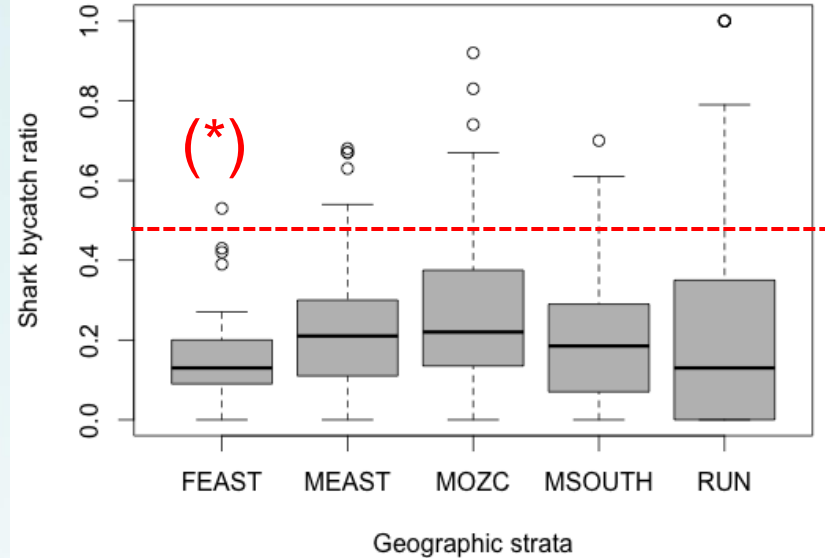
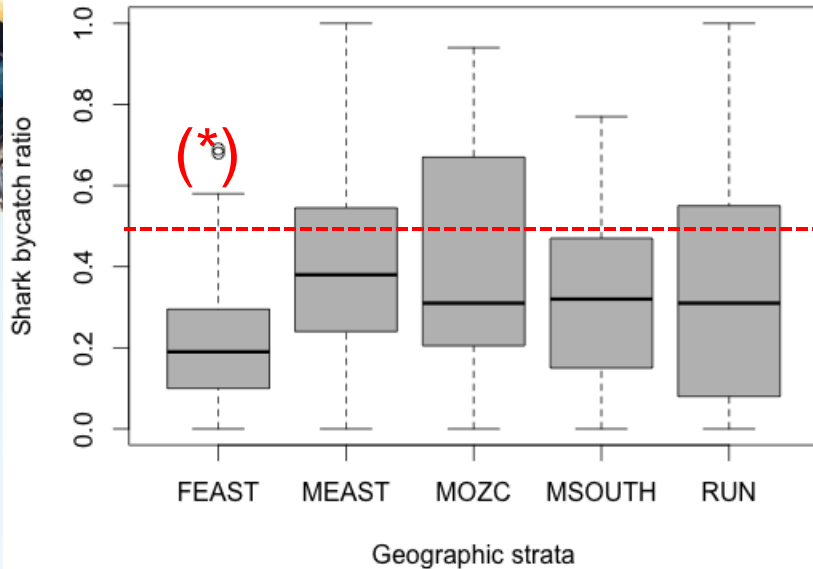
3-ALPHA CODE	Scientific name	English common name	Observer	Self-reporting
BSH	<i>Prionace glauca</i>	Blue shark		
OCS	<i>Carcharhinus longimanus</i>	Oceanic whitetip		
PTH	<i>Alopias pelagicus</i>	Pelagic thresher		
BTH	<i>Alopias superciliosus</i>	Bigeye thresher		
THR	<i>Alopias spp.</i>	Thresher sharks		
SMA	<i>Isurus oxyrinchus</i>	Shortfin mako		
LMA	<i>Isurus paucus</i>	Longfin mako		
MAK	<i>Isurus spp.</i>	Mako sharks		
SPL	<i>Sphyrna lewini</i>	Scalloped hammerhead		
SPZ	<i>Sphyrna zygaena</i>	Smooth hammerhead		
SPN	<i>Sphyrna spp.</i>	Hammerhead sharks		
GAC	<i>Galeocerdo cuvier</i>	Tiger shark		
AML	<i>Carcharhinus amblyrhynchos</i>	Blacktail reef shark		
ALS	<i>Carcharhinus albimarginatus</i>	Silvertip shark		
FAL	<i>Carcharhinus falciformis</i>	Silky shark		
CWZ	<i>Carcharhinus spp</i>	Requiem shark		
PSK	<i>Pseudocarcharias kamoharai</i>	Crocodile shark		
SKH	Non-identified shark	Non-identified shark		

15 species reported (observer) pooled into 8 species or group of species (resolution from the self-reporting project)

RESULTS

Shark / (Shark + Swordfish)

Shark / (Shark + Swordfish + Tunas)

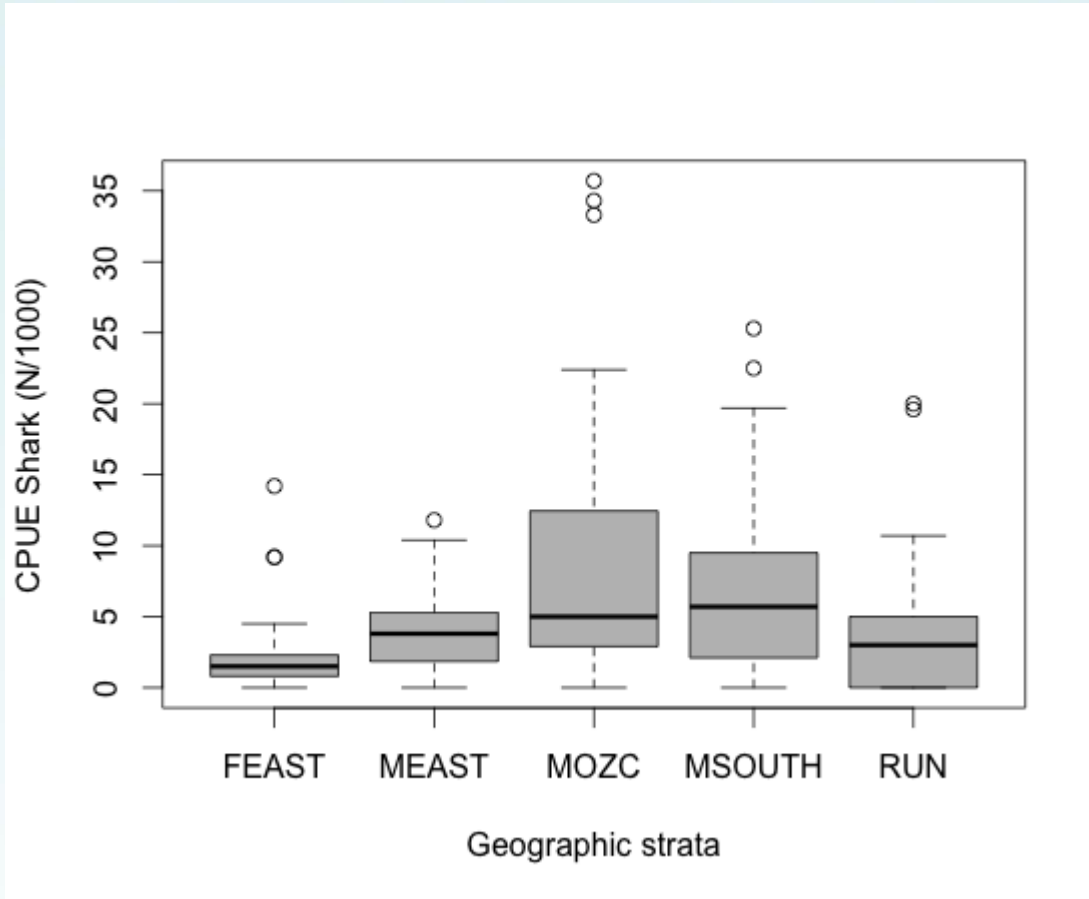


Mean = 0.25 to 0.40
CV (%) = 54 to 86

Mean = 0.17 to 0.29
CV (%) = 69 to 121

RESULTS

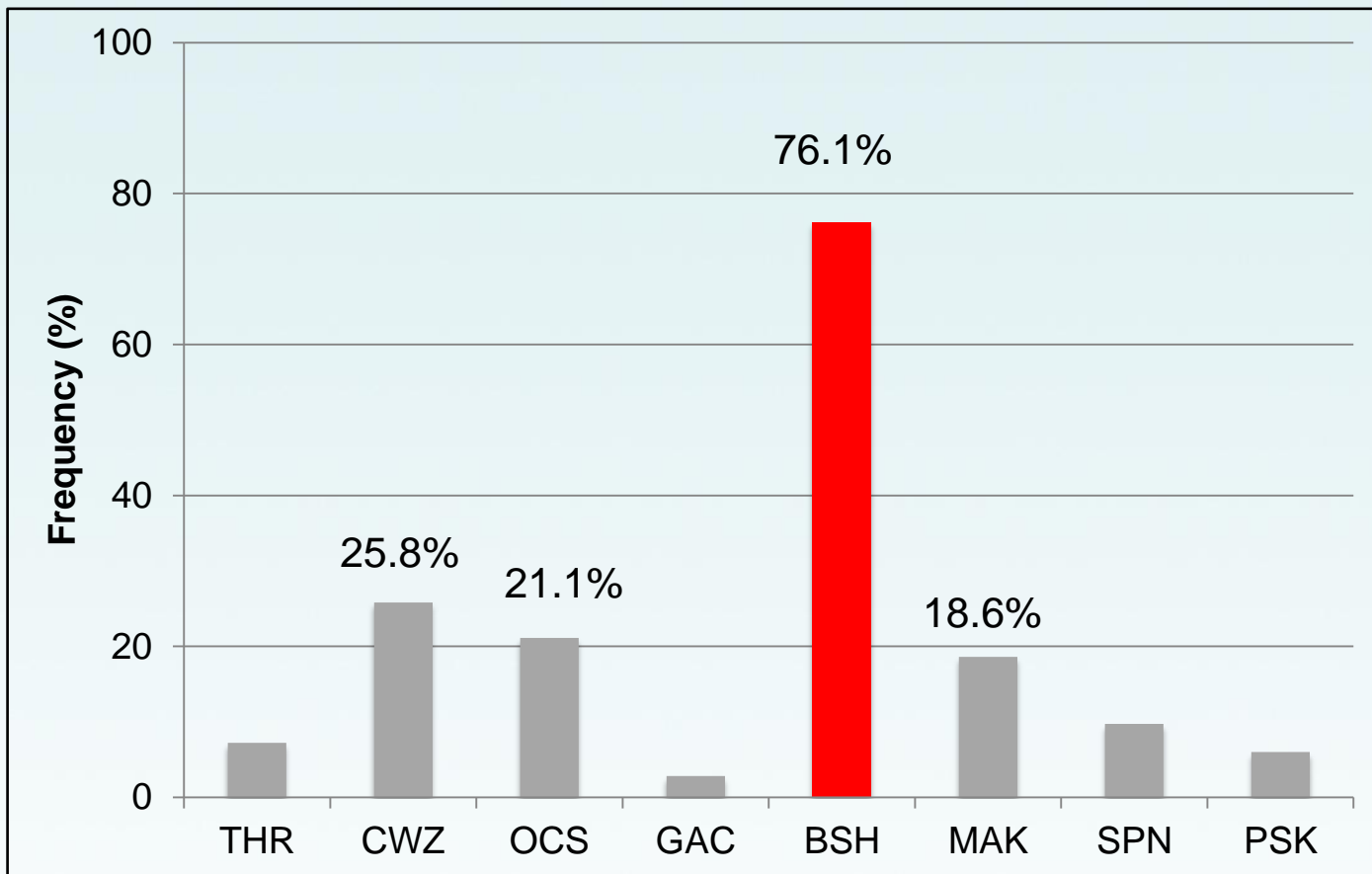
Total shark CPUE (N/1000) per geographic area



Mean = 2.8 (FEAST) to 8.6 (MOZC) per 1000 hooks

RESULTS

Occurrence (%) of shark species in the dataset



RESULTS

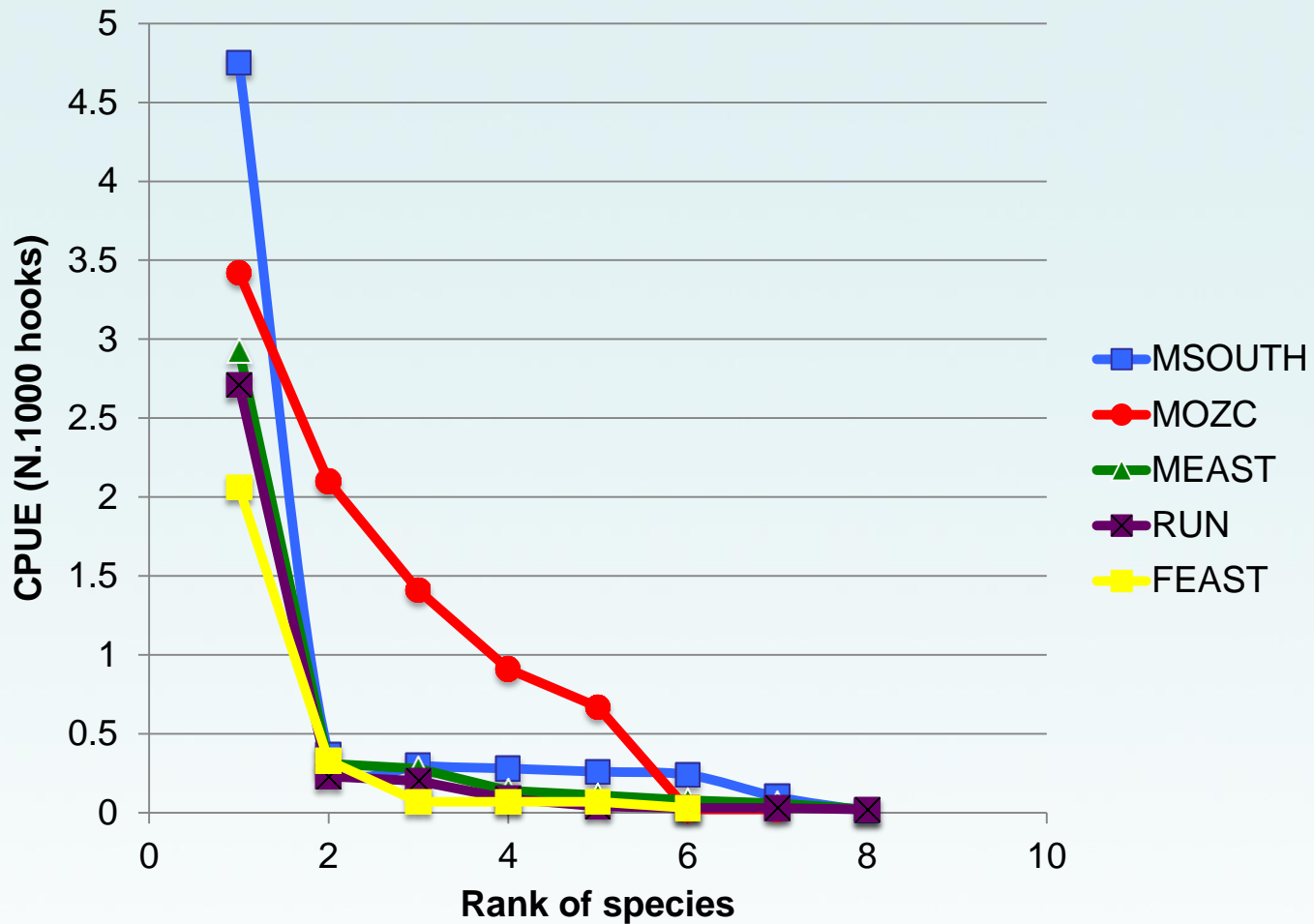
Rank of the specific capture per geographic area

	1	2	3	4	5	6	7	8
MOZC	CWZ	BSH	THR	SPN	OCS	MAK	PSK	
MSOUTH	BSH	CWZ	SPN	THR	MAK	PSK	OCS	GAC
MEAST	BSH	OCS	CWZ	MAK	THR	SPN	GAC	PSK
RUN	BSH	OCS	MAK	CWZ	SPN	GAC	PSK	THR
FEAST	BSH	MAK	THR	CWZ	PSK	OCS		



RESULTS

Shark species CPUE vs rank (SAD) per geographic area



CONCLUSIONS

- ❖ Shark Bycatch ratio distributions vs swordfish displayed an average value of 30% with a coefficient variation 70% on average which must be considered for shark bycatch estimation purposes based on target species.
- ❖ Interquartiles extents of shark bycatch ratio distributions and bycatch ratio based on swordfish and tunas capture are lower than those calculated for bycatch ratio based on swordfish capture.
Accurate indicator for targeting strategies used as covariates in LL CPUE standardization statistical models.
- ❖ Average of sharks nominal CPUEs are ranged from 2.8 fish/1000 hooks in the FEAST region to 8.6 fish/1000 hooks in the MOZC.
- ❖ Regarding species CPUE distributions, two regions can be distinguished :
 - MOZC characterized by a higher species diversity than in the East part of the SWIO basin. In this region requiem sharks group (FAL) is dominant in shark bycatch.
 - Shark bycatches in the East part of the SWIO basin are highly driven by the blue shark with a West – East trend of nominal CPUEs.

Are these two last results dependant of the fishery activites (gear, season, ...) OR do they reflect the current situation of the shark community in the SWIO ?

