



# Multispecies size-samples conducted at landing ports

## Materials

- ~6,500 samples made during 1990-2013 in the brine-freezing wells
- Selection of samples with  $>50$  fishes measured: 6,400 samples
- Fishing mode of the sample derived from logbooks and well plans
- Only samples from the same fishing mode and close origin of sets are considered

# 16% of samples on FSC have small YFT (<10 kg)

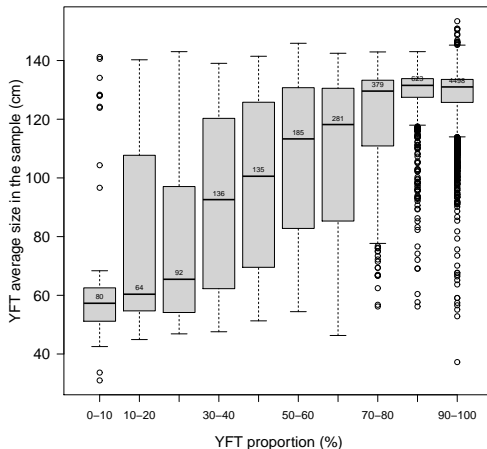
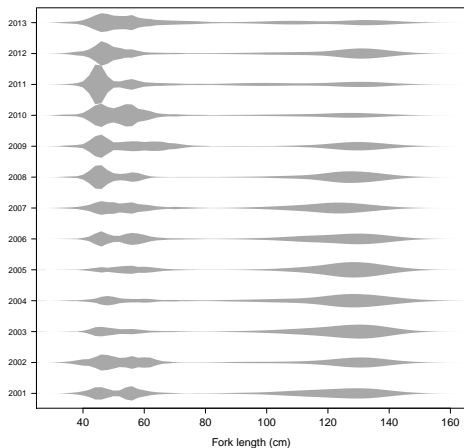


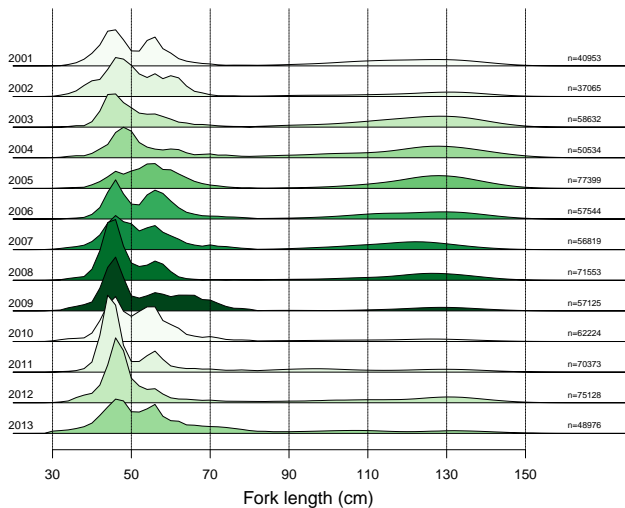
Figure: Average size of YFT as a function of YFT proportion in the samples

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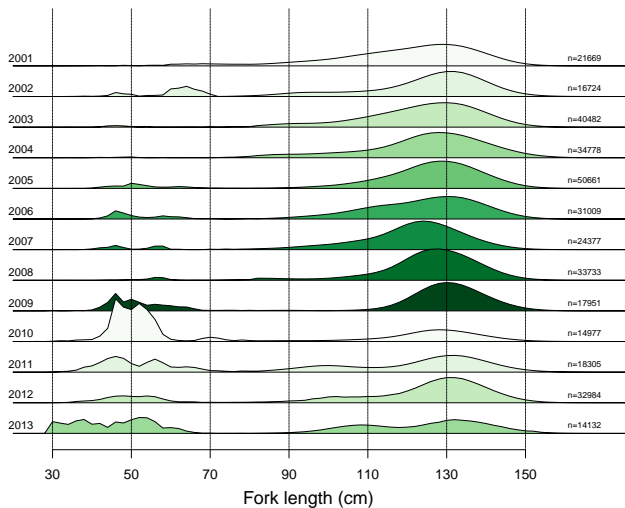


**Figure:** Proportion of fish sampled by size during 2001-2013 collected from wells of purse seiners originating from fishing sets on free-swimming school

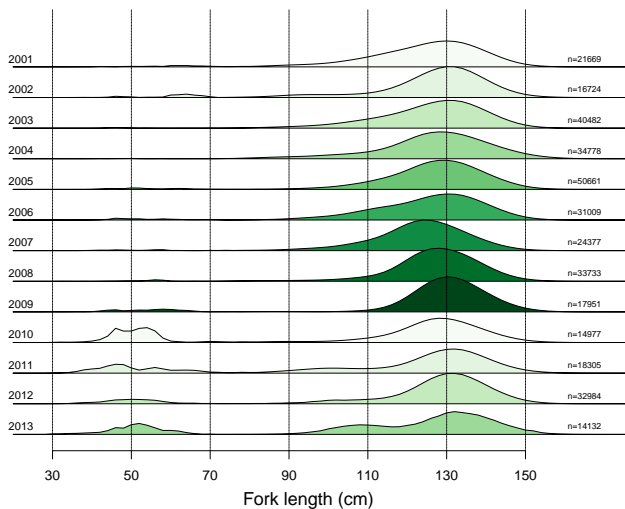
# Cumulated (weighted) SF samples of YFT



# Cumulated (weighted) SF samples of YFT on FSC



# Cumulated (unweighted) SF samples of YFT on FSC



## Samples with small YFT come from all over the WIO

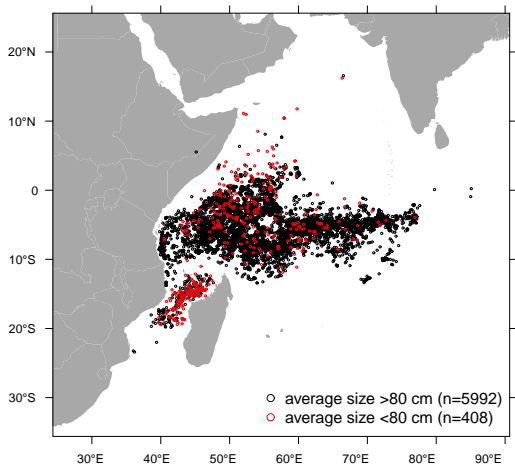


Figure: Origin of samples of average size > and <80 cm FL



# Spatial structure in the average size in FSC schools

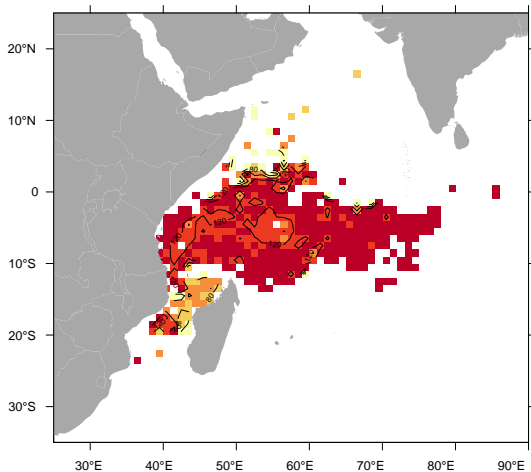


Figure: Density map of average size of tunas in free-swimming schools

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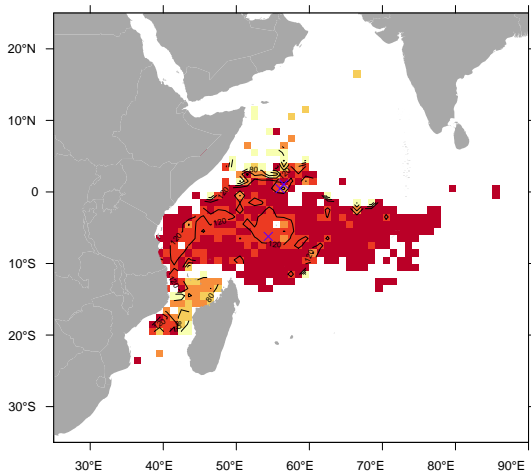
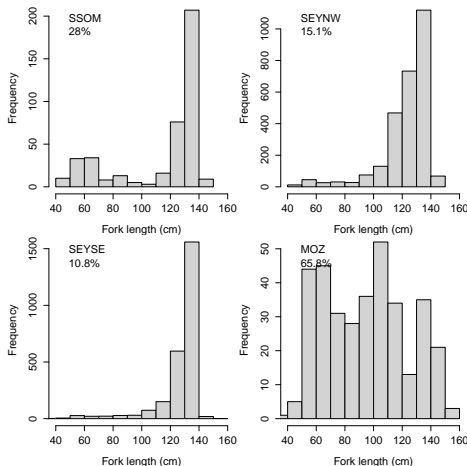


Figure: Density map of average size of tunas in free-swimming schools

# High variability in average size in the Mozambique Channel

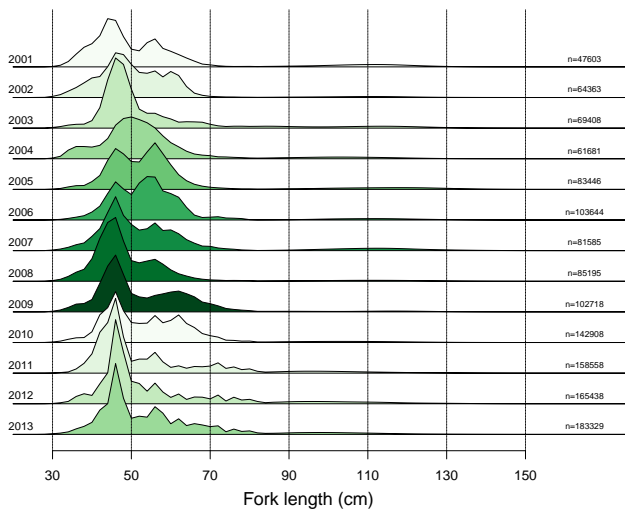


**Figure:** Frequency histograms of average sample size by large sampling area. % indicates the number of samples with small YFT observed

## Issue in fishing mode identification or reality?

- Effect of bathymetry on the size of YFT: average size of about 120 cm around the Seychelles vs. 130 cm in open-sea areas
- Influence of the seamounts (Travin Bank): local effect as well as possible issue in logbook declaration
- Specific case of the Mozambique Channel: Complex active area with a lot of drifting floating objects (50% of natural ones)

## A similar issue with SF samples of YFT on FADs



# Are there some small yellowfin tunas caught in FSC?

YES!

- Why? Associative behaviour for juveniles around floating objects (LOGS/FADs) and spawning aggregations for large YFT (>90 cm)
- Expected increased fitness through aggregations: “meeting-point hypothesis” and evidence of strong social behaviour (Robert et al. 2014)
- Clear issue in the Mozambique Channel where there is a high mixing between log-associated and free-swimming schools
- What should be done for the SA of YFT? Should we aggregate all small YFT?