

# Un update on the length-weight relationships for bigeye and yellowfin caught by purse seiners in the Indian Ocean

Chassot E<sup>1</sup>, Esparon J<sup>2</sup>, Tyrant A<sup>2</sup>, Dewals P<sup>1</sup>, Delgado de Molina A<sup>3</sup>,  
Areso JJA<sup>4</sup>, Bodin N<sup>1</sup>

<sup>1</sup>Institut de Recherche pour le Développement

<sup>2</sup>Seychelles Fishing Authority

<sup>3</sup>Instituto Español de Oceanografía

<sup>4</sup>Spanish Fisheries Office



# Outline

1 Context

2 Yellowfin

3 Bigeye

4 Effect of defrosting

5 Conclusions

# Length-weight relationships are key to PS data processing

- The species composition of the PS catch is derived from counts and size measures during the sampling
- The current length-weight relationship for YFT is split into 2 components:  $<64$  cm and  $>64$  cm (Montaudoin et al. 1990)
- The current length-weight relationship for BET is based on old data (Cort 1986) when the fishery was small and restricted in space
- The current length-weight relationship for SKJ comes from the Atlantic Ocean (Cayré & Laloë 1988)

# Which raw data are currently available?

## Data sources

- Historical raw data lost (Cort 1986, Montaudoin et al. 1990)
- SFA Observer data (1986-1991)
- IRD (2003)
- IOT Ltd. cannery (2003-2013)
- RTTP tagging operations (2005-2007)
- RTTP-IO recaptures (2007-2013)
- EMOTION and CANAL projects (2011-2013)

# Outline

1 Context

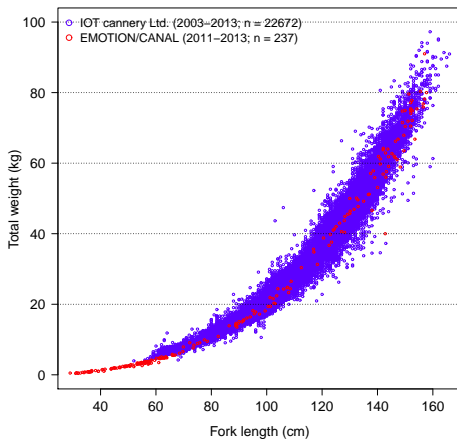
2 Yellowfin

3 Bigeye

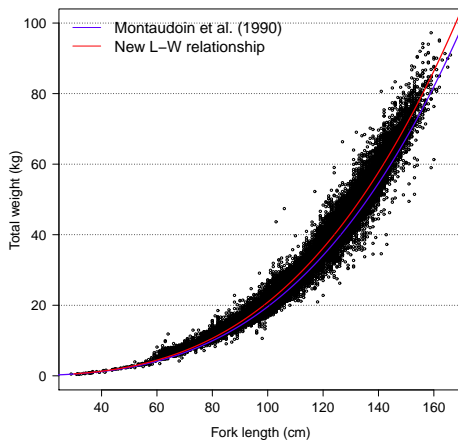
4 Effect of defrosting

5 Conclusions

# A large number of samples collected over the last decade



# Weight above 100 cm was underestimated

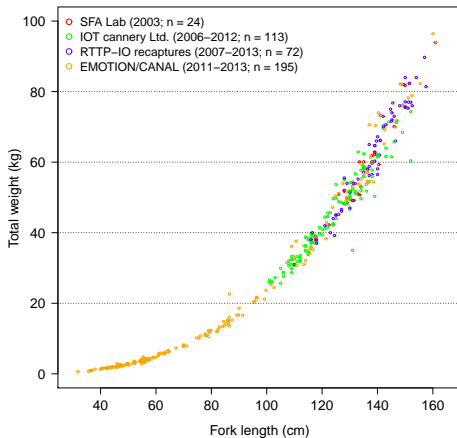


# Outline

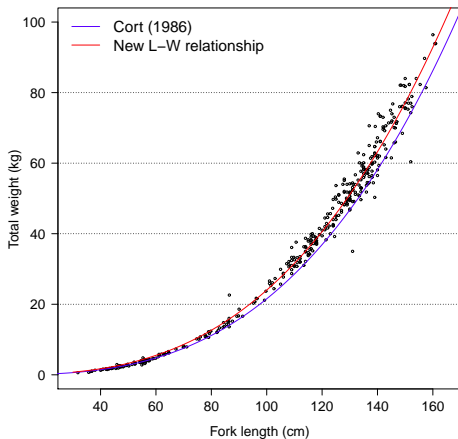
- 1 Context
- 2 Yellowfin
- 3 Bigeye**
- 4 Effect of defrosting
- 5 Conclusions



# Complementarity of the data sources



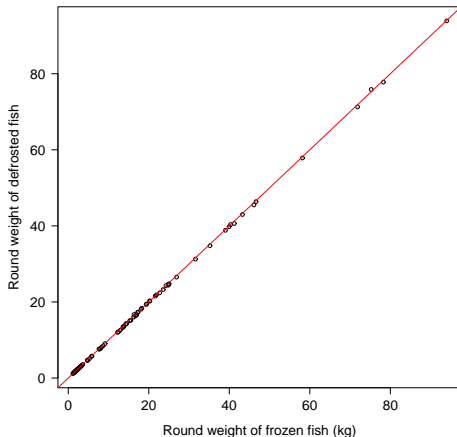
# Underestimation of weight by the old relationship



# Outline

- 1 Context
- 2 Yellowfin
- 3 Bigeye
- 4 Effect of defrosting**
- 5 Conclusions

# Fishes were weighted frozen and after defrosting



**Figure:** Sample of 93 tunas collected in 2013 at the SFA lab. Red line indicates expected 1:1 relationship

# Some systematic bias in the weight of tunas after defrosting

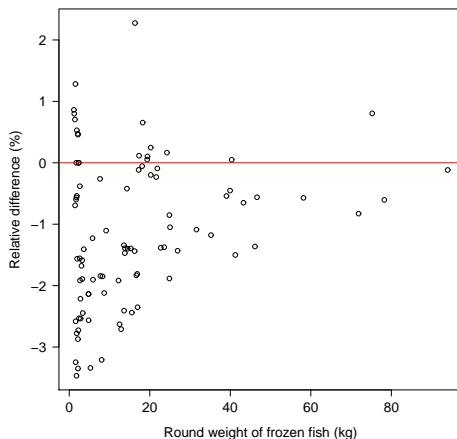


Figure: Bias is small (average bias  $< 1.2\%$  of weight) and decreases with size

# Outline

- 1 Context
- 2 Yellowfin
- 3 Bigeye
- 4 Effect of defrosting
- 5 Conclusions**

## Keypoints

- Updated relationships covering the full size range
- No effect of sex on length-weight relationship for YFT
- Small effect of defrosting (loss of water)
- Provision of all the raw data to the IOTC secretariat

## Perspectives

- Large variability around mean length-weight regression model suggests that keys might be better than deterministic relationships
- Quantifying the effects of freezing on weight?
- Estimating the effects of the change in relationships on the PS catch
- Sampling at the IOT Ltd. cannery will be extended to skipjack and small bigeye in 2014
- Purchase of a scale to conduct samplings at-sea and at-port, especially for large BET and ALB, as well as bycatch species
- Work currently ongoing for skipjack through the IRD/SFA projects
- Ongoing development of a database to host the biological data that would be publicly available