



**PBF size composition 2020-2021 from the Mexican purse seine
fishery from data collected at pen rearing operations**

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Summary

An analysis of the PBF catch size-composition data for 2020 and 2021 fishing seasons is presented based on length measurements taken from stereoscopic underwater camera videos during pen transfer operations of live PBF tuna. PBF average size for the 2020 was 121 cm furcal length and in 2021, 140 cm. The highest modes in 2020 and 2021 are located in 108 cm and 156 cm respectively.

Introduction

Information related to size composition has been presented to PBFWGs in the past, Aires-da-Silva and Dreyfus, 2012, Dreyfus and Aires-da-Silva, 2014, Dreyfus and Aires-da-Silva, 2015 where a statistical method was used for the first time to raise sample sizes from stereoscopic underwater cameras during PBF transfers from transportation pens to feeding pens, in Dreyfus, 2018 and Dreyfus 2020 the same methodology was applied as well as now for data obtained from the 2020 and 2021 fishing operations.

During recent years, collaborative efforts between INAPESCA-Mexico, FIDEMAR that manages a national observer program and the PBF fishing industry generated access to PBF size-composition data collected during pen transfer operations. Stereoscopic cameras have been introduced in the bluefin ranch sector and are utilized to obtain counts of fish and estimates of individual fish lengths, as well as weight composition data, under at-sea transfer conditions. This state-of-the-art technology provides a large volume of high-quality length-frequency data (Phillips et al, 2009).

Materials and Methods

A size data sample was obtained from stereoscopic cameras video measurements for each set-transfer and the PBF size-composition data was raised to total catch using the equation below, used in previous analysis:

$$N_{ik} = (n_{ijk} * C_{jk} / S_{jk}) * R_k$$

where

N_i is the estimate of the number of fish in size bin i for year k .

i = size bin (2cm bins from smallest size to largest size)

j = sampled set

k = year

n = # fish measured in a set

C = catch per set sampled (tons)

S = amount in tons of fish measured in a set

R = total PBF catch in year k / $\sum C_{jk}$ (where the sum is over j)

Results and Discussion

In figure 1 is presented the size composition of the catch for 2020 and 2021, with fish from 2 to 5 year old present in the fishery and probably also 6 and older specially in 2020. In 2020, most are individuals from 2 to 3 years of age and in 2021 probably the majority are individuals from 4 to 5 years of age.

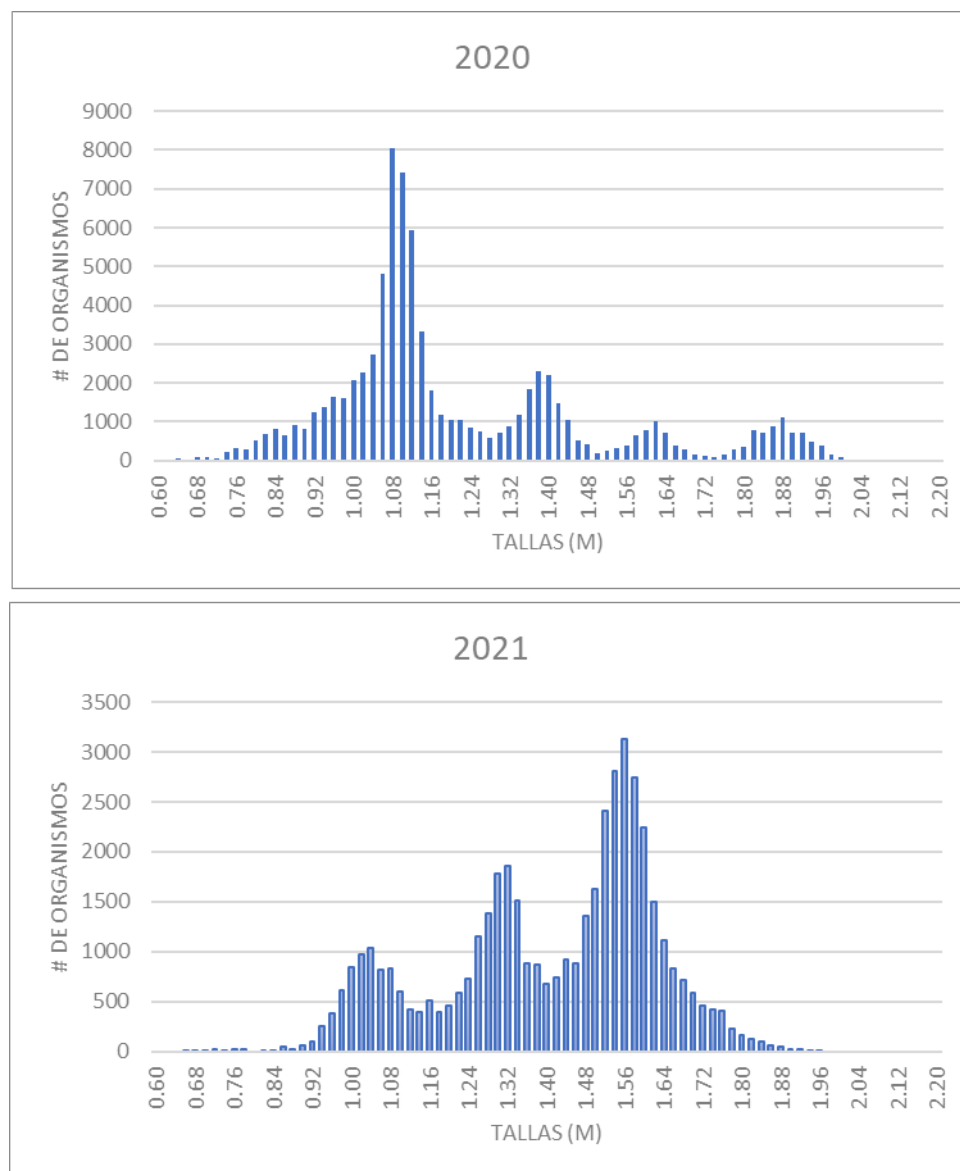


Figure 1. PBF catch size composition in the Mexican purse seine fishery, 2020-2021

In the next table (1), some statistics are presented, minimum and maximum size present in the catch, average size, and the size bin where the highest two modes are located. In both cases Average size lies between the two highest modes.

Table 1. Size statistics of the PBF Mexican purse seine catch

| | 2020 | 2021 |
|---------------------|--------|--------|
| Minimum size | 60 cm | 66 cm |
| Maximum size | 220 cm | 196 cm |
| Average size | 121 cm | 140 cm |
| Highest Mode | 108 cm | 156 cm |
| Second Highest Mode | 138 cm | 132 cm |

The spectrum of sizes is similar to previous years but variation of main sizes that conform the catch is variable.

References

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