

## WORKING GROUP TO REVIEW STOCK ASSESSMENTS

### 7<sup>TH</sup> MEETING

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### DOCUMENT SAR-7-09

## **Body-weight (dressed weight) and fin-weight ratios of several species of shark caught by Spanish longliners in the Indian Ocean**

by

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#### *Summary*

*This document provides information about the fin-weight (all fins) percentage of several species of shark in relation to the dressed weight (DW) of the specimen from which they originate, with a view to providing information to point 5 of Resolution IATTC C-05-03.*

*Although the specimens studied were caught in the south-western Indian Ocean, they belong to four species of shark that are widely distributed and, as a result, are also caught in the eastern Pacific Ocean.*

*In this work it has been found that, for all species studied, the percentage of fins (FW) in reference to dressed weight (DW) belonging to every shark is higher than the value established in Resolution. Values obtained would fluctuate between 6.26% and 16.05% depending on species.*

#### *Resumen*

*En este documento se aporta información sobre el porcentaje en peso que las aletas de distintas especies de tiburones (todas juntas) suponen sobre el peso total del ejemplar del que provienen, con vistas a suministrar información para la formulación del punto 5 de la Resolución de CIAT C-05-03.*

*Aunque los ejemplares estudiados fueron capturados en el Océano Índico sudoccidental, son de cuatro especies de tiburones que tienen una amplia distribución y, consecuentemente, se capturan también en el Océano Pacífico oriental.*

*En este trabajo se ha encontrado, para todas las especies objeto de estudio, que el porcentaje del peso de las aletas (FW) con respecto al peso canal (DW) del tiburón de procedencia es superior al valor establecido en la Resolución. Los valores obtenidos han oscilado entre el 6.26% y el 16.05% según las especies.*

*Keywords: Large pelagic sharks, fins, body weight, ratios.*

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## Introduction

Section 5 of Resolution C-05-03 of the Inter-American Tropical Tuna Commission concerning Shark Conservation establishes a review by the working group on stock assessment of the factor that exists between the fin weight and body weight of sharks caught. Section 4 of this Resolution indicates that fins on board must not exceed 5% of the weight of sharks on board. Section 3 indicates that the percentage of fin weight (FW) refers to the dressed weight (DW)—round weight minus head, fins, viscera and skin—of the sharks caught.

Fin-body weight ratios may significantly affect catch estimations and, in the final analysis, may influence assessment results, as it is the matter, to comply this Resolution for this purpose.

In 2005, two Spanish surface longliners carried out an experimental fishing action in the waters of the south-western Indian Ocean designed to analyse the selection of different types of hook and bait, particularly where sea turtles were concerned. Scientific observers were permanently on board, enabling the gathering of copious and important biological and fishing information about the different species caught.

Although the experiment was performed in the Indian Ocean, the data and results analysed in this document are of shark species that are widely distributed in the different oceans.

## Material and methods

Annex 1 gives the scientific names and common names in Spanish and English, and the codes of the different species studied in this document.

Commercial fins are defined as the combination of fins that fishermen retain for commercial purposes in each vessel or fleet. For Spanish fleets, this consists of all fins, including the whole tail. However, this criterion is not followed by all fleets trading in shark fins.

In this respect, fin processing on these boats has been carried out in the following manner: fins are removed by means of a straight or “L” cut, tending towards a moon or half-moon cut for the pectoral and dorsal fins. Small fins are usually discarded. Processing the rest of the body may vary according to species, although for all of them the body is kept with skin in holds.

Observers on board the two boats participating in the pilot action gathered data on fin exploitation for each shark specimen caught. For each specimen, they noted the fork length to the lowest centimetre, the weight (round, dressed or estimated) and the weight of the fins taken from the animal (together or by type: anal, pectoral, pelvic, caudal and dorsal). The weight of the specimens and the fins were both taken in kg and were accurate to 100 g.

Fins were wet weighed immediately after removal, since, when dry, it was impossible to identify their origin.

## Results

Table I shows the percentages of fin weight compared with the dressed weight of the species studied, as well as the number of samples used for this calculation.

We observed differences per species in the percentages found. For DW, fin weight in relation to total body weight involved percentages from 6.25% for short-fin mako (SMA) to 16.05% for silky shark (OCS).

The values given by Mejuto *et al* (2004) referring to the percentage of fin weight to DW: 13.58% and 14.72% for blue shark (BSH) are similar to those obtained in this study: 14.90%.

Figures 1 to 4 show fins weight (FW) in relation to dressed weight (DW) and the percentage that fins suppose (%FW) over these weights for the four species of sharks studied: blue shark (BSH), short-fin mako (SMA), silky shark (FAL) and white-tip shark (OCS). Data values, tendency line and media value are represented.

## Discussion

If we consider a combination of shark species, it is evident that the percentage to be retained would be close to the values obtained for the blue shark. This species is clearly predominant among large pelagic sharks and in catches made by the Spanish long-line fleet. Similarly, it is one of the predominant species on the international fin markets of long-distance pelagic fleets.

Fin-body weight ratios did not vary for a wide spectrum of sizes in blue shark or short-fin mako. This suggests that it is advisable to use specific mean ratios of species for all the sizes combined or, for compliance purposes, threshold values per species or groups of species defined through their respective upper confidence limits.

The different criteria used by the various fleets for removing fins, presenting the fish, drying fins on board, and retaining fins or parts of fins explain the considerable differences in ratios obtained for the same species when comparing fleets. They also make it very difficult and inaccurate to apply a universal and unique numerical ratio without full knowledge of the methods used by each fleet, particularly when this percentage is based on weights that have been processed (dressed, trunk etc) or are at different stages of the fin-drying process, or when only some fins or parts of fins are included in the calculations.

It would be advisable to develop and implement conversion factors for fin and body weight specifically based on the fleet and/or the species. However, this would seriously complicate control tasks. Consequently, it would seem simpler and more efficient to consider one single factor that would logically encompass all that factors calculable per species.

## References

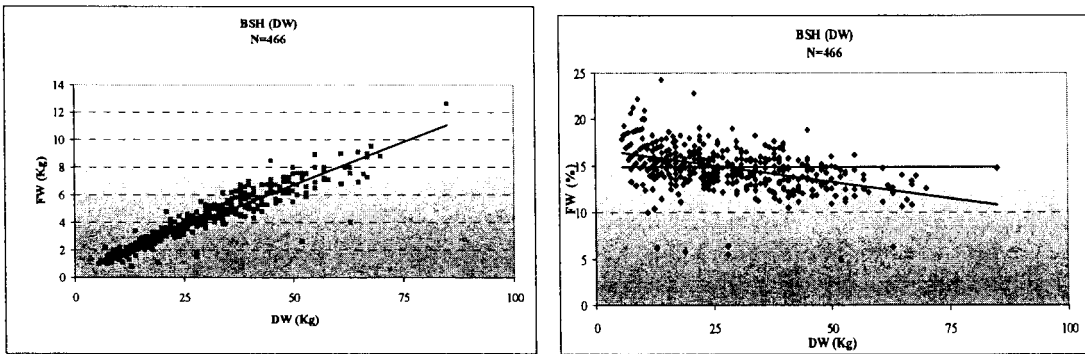
Cortés, E. and Julie A. Neer. 2006. Preliminary reassessment of the validity of the validity of the 5% fin to carcass weight ratio for sharks. Col. Vol. Sci. Pap. ICCAT, 59(3). (At press).

Mejuto, J. and Blanca García-Cortés. 2004. Preliminary relationships between the wet fin weight and the body weight of some large pelagic sharks caught by the Spanish surface longline fleet. Col. Vol. Sci. Pap. ICCAT, 56(1): 243-253.

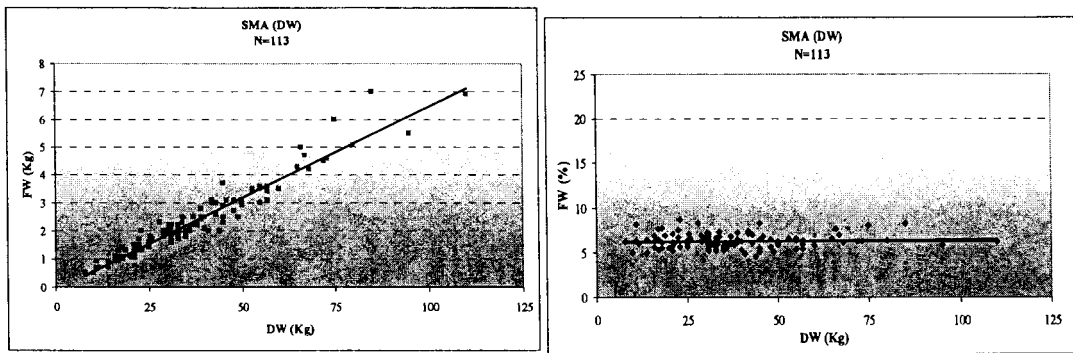
**Table 1.** Number of fish sampled (n) per species and mean values of percentage of fins (%FW/DW) for the main species of sharks from AP-08/2004 raw data. Values are calculated over dressed weight (DW)

Species	FAO Code	n	%FW/DW
<i>Prionace glauca</i>	BSH	466	14.90
<i>Isurus oxyrinchus</i>	SMA	113	6.26
<i>Carcharhinus falciformis</i>	FAL	8	11.16
<i>Carcharhinus longimanus</i>	OCS	20	16.05

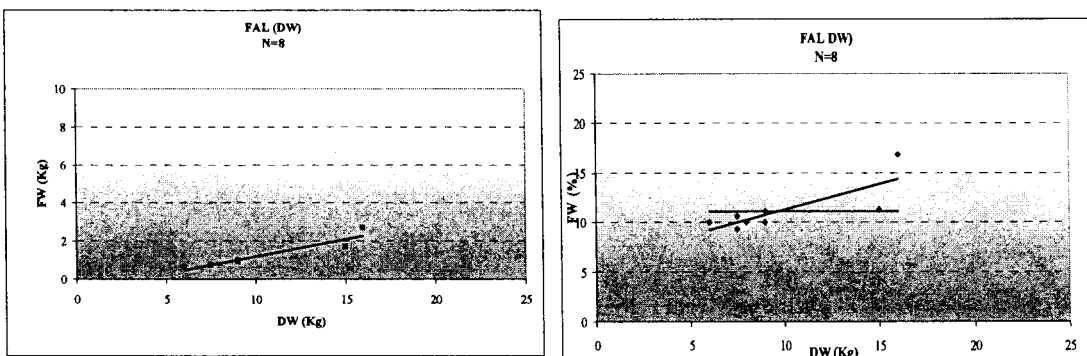
**Figure 1.** Percentage of fins, conversion factors and correlations between fin weight (FW) and carcass weight (DW) for blue shark (BSH) from Pilot Action RAI-AP-08/2004 data in South Western Indian Ocean. Data values, tendency line (in black) and media value (in red) are represented.



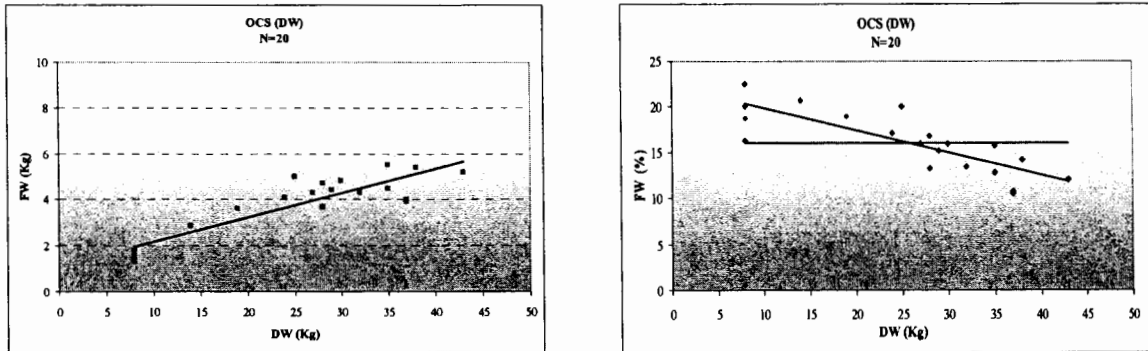
**Figure 2.** Percentage of fins, conversion factors and correlations between fin weight (FW) and carcass weight (DW) for short-fin mako (SMA) from Pilot Action RAI-AP-08/2004 data in South Western Indian Ocean. Data values, tendency line (in black) and media value (in red) are represented.



**Figure 3.** Percentage of fins, conversion factors and correlations between fin weight (FW) and carcass weight (DW) for silky shark (FAL) from Pilot Action RAI-AP-08/2004 data in South Western Indian Ocean. Data values, tendency line (in black) and media value (in red) are represented.



**Figure 4.** Percentage of fins, conversion factors and correlations between fin weight (FW) and and carcass weight (DW) for oceanic white-tip shark (OCS) from Pilot Action RAI-AP-08/2004 data in South Western Indian Ocean. Data values, tendency line (in black) and media value (in red) are represented.



## ANNEX 1

### List of species and codes:

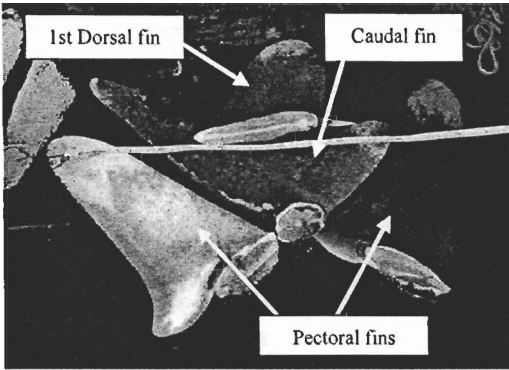
CODE FAO	FAO SCIENTIFIC NAMES	COMMON NAMES (English / Spanish)	Code RAI-AP-08/2004
FAL	<i>Carcharhinus falciformis</i> (Bibron, 1839)	Silky shark / Tiburón jaquetón	CFA
OCS	<i>Carcharhinus longimanus</i> (Poey, 1861)	Oceanic whitetip shark / Cazón, jaquetón de ley	CLO
SMA	<i>Isurus oxyrinchus</i> <i>Rafinesque, 1810</i>	Shortfin mako / Marrajo dientuso	IOX
BSH	<i>Prionace glauca</i> (Linnaeus, 1758)	Blue shark / Quella, tiburón azul	PGL

### Codes for measured weight (FAO/IATTC):

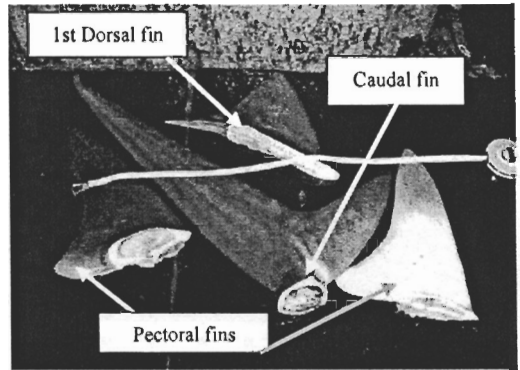
*DW*: Dressed weight, trunk weight or carcass weight (Kg).

*FW*: Fins weight (Kg).

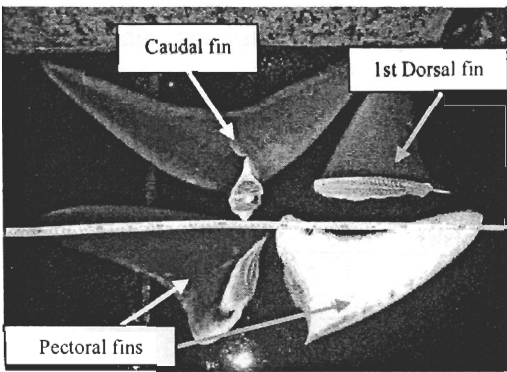
Types of fins processed on board (wet weighed):



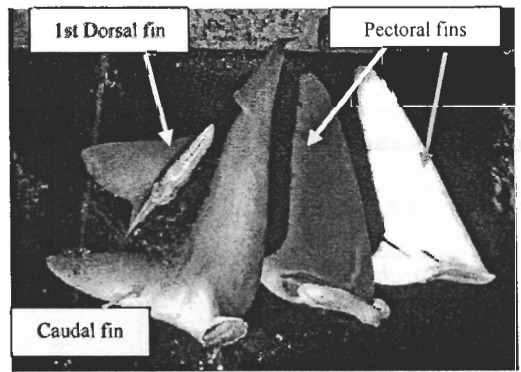
Fins of *Carcharhinus longimanus*



Fins of *Galeocerdo cuvieri*



Fins of *Isurus oxirhynchus*



Fins of *Prionace glauca*

