

Preliminary analyses of catch rate by hook type and bait from observer data obtained during the longline experimental cruise on Spanish longliners in the Southwestern Indian Ocean

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Abstract

This document presents information about the experimental campaign being carried out by the Spanish Oceanographic Institute (IEO) on two surface longliners in the waters of the Southwestern Indian Ocean. These experimental fisheries use several types of hooks and bait, and scientific observers have been present from the onset (mid December 2004). The pilot action is being undertaken by two surface longliners that commenced their activities on 12 December 2004. The working area is in international waters between 25° S and 35° S and 30° E and 50° E. Although there is a space-time stratification for sampling in the prospection area, it has not been taken into consideration for this document. Joint analysis has been made of all the specimens sampled since activities began (268 sets) for the entire area.

1.- Introduction

At the meeting of the Scientific Committee of the IOTC in November 2004, information was provided about the experimental campaign being carried out by the Spanish Oceanographic Institute (IEO) on two surface longliners in the waters of the Southwestern Indian Ocean.

These experimental fisheries use several types of hooks and bait, and scientific observers have been present on the two participating vessels from the onset (mid December 2004). At all the sets the observers take down data about catches (situation, time, species, hook, bait, etc) and about biological data (size, sex, individual weight, gonadal weight, etc) of the various species caught.

Although the experimental fishery has not yet finalised—it is midway through—the following data are currently available for the various species caught: number of specimens and weight, type of hook and bait.

This document presents the preliminary results for catch ratios per type of hook and bait from the data obtained by the observers until now.

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2.- Material and Methods

The pilot action is being undertaken by two surface longliners that commenced their activities on 12 December 2004. The working area is in international waters between 25° S and 35° S and 30° E and 50° E (Figure 1).

Although there is a space-time stratification for sampling in the prospection area, it has not been taken into consideration for this document. Joint analysis has been made of all the specimens sampled since activities began (268 sets) for the entire area.

From the beginning, the same long line configuration has been used for both vessels. Basically, the long line has a fixed part, made up of 960 hooks of four different types, placed sequentially in 4 blocks of 240 hooks (60 of each type), each block baited alternately with two types of bait: mackerel and squid-like species. The variable part of the long line (used occasionally when the sea state and duration of the manoeuvre permit) is made up of 60 or 120 hooks of one or two types, either the same as some hooks in the fixed part or with several varieties of fixed-part hooks, baited with either mackerel or squid-like species.

The hooks used were: A1: 16 J conventional metal; A2: 16 J conventional blue; A3: 18 O metal and A4: 18 O blue in the fixed part and A5: 18 J metal.

The bait used was: C1: mackerel and C2: squid-like species.

The long lines were shot at dusk (16.00 GMT) and pulled in the following morning (03.00 GMT), normally turning about at the final casting point.

Each longline was equipped with a Micrel depth register that showed depth and temperature. The fishing gear was working at depths of between 40 and 90 m.

3.- Results

Table 1 shows the catch ratios, in number of specimens per 1000 hooks used for type of bait, total catch ratio and total catch (number) for each species, in the first part of the Spanish AP 08/2004 in Indian Ocean waters.

Table 1 gives the results in decreasing order according to the total catch ratio per species (total of specimens per 1000 hooks, including all types of hook and bait used).

These data should be considered provisional and are to be analysed once the pilot action is over. Although these values are not final, they give an idea of the species involved in surface longline fisheries, in the area and period where the pilot action was undertaken until the present time.

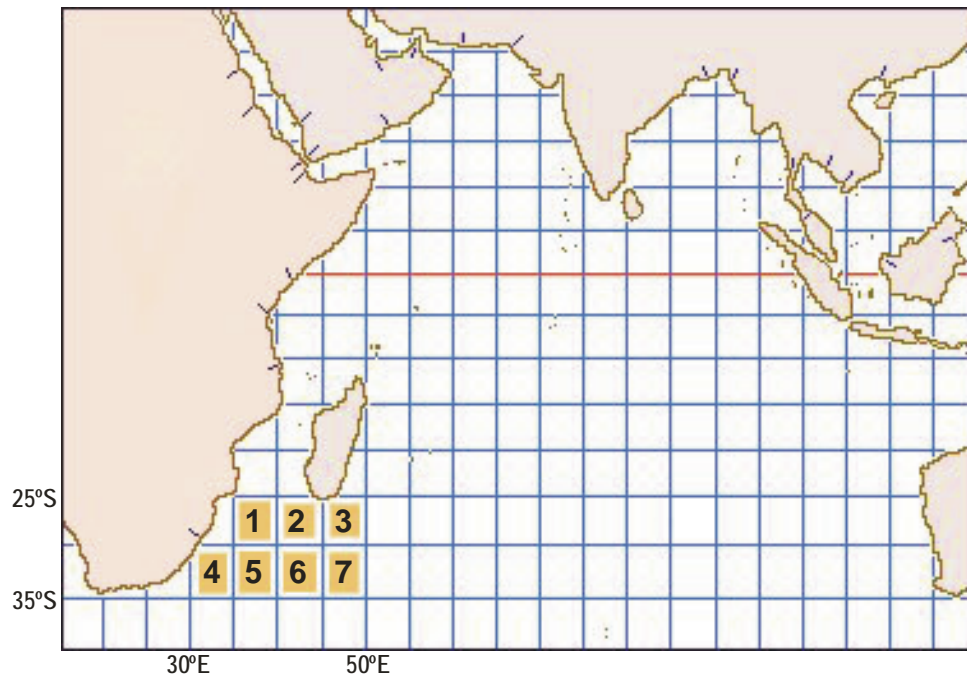


Figure 1 Area where the AP 08-2004 was carried out.

AP 08 / 2004 Indian Ocean		Hook	A1	A1	A2	A2	A3	A3	A4	A4	A5	A5	TOTAL
		Bait	C1	C2	C1	C2	C1	C2	C1	C2	C1	C2	TOTAL
		N° sets	264	268	264	268	139	139	264	268	49	49	268
		Fixed LL	31680	32580	31680	32580	16680	16680	40800	42720	5880	5880	257160
		Variable LL	2580	120	1020	360	840	60	540	180	840	0	6540
		Total hooks	34260	32700	32700	32940	17520	16740	41340	42900	6720	5880	263700
Name		Code	Catch rate in numbers per 1000 hooks										Number
Xiphias gladius	SWO	21.6	17.5	24.0	19.4	21.9	17.5	23.6	15.0	23.5	14.6	20.0	5275
Prionace glauca	PGL	17.5	9.5	15.0	9.3	18.3	9.3	16.9	9.7	14.1	5.3	13.0	3421
Thunnus obesus	BET	1.2	4.5	1.0	4.8	1.5	8.2	1.5	5.9	3.7	7.8	3.5	933
Dasyatis violacea	DVI	2.8	5.9	2.4	5.0	1.5	3.0	1.0	1.7	2.2	3.9	2.9	763
Coryphaena hippurus	COH	2.2	3.5	2.9	2.5	3.3	2.9	2.8	1.7	1.9	1.0	2.6	681
Lepidocybium flavobrunneum	LEC	3.3	1.6	2.6	1.5	3.2	2.0	2.6	1.0	4.5	1.2	2.2	574
Isurus oxyrinchus	IOX	2.2	1.2	2.9	0.7	2.7	0.8	2.9	1.3	3.1	0.5	1.9	496
Thunnus albacares	YFT	0.6	1.9	0.8	2.1	1.3	0.9	0.8	1.7	0.9	5.4	1.4	368
Carcharhinus falciformis	CFA	1.3	0.8	1.2	1.1	1.5	1.5	1.5	1.2	2.4	1.0	1.3	338
Carcharhinus longimanus	CLO	0.8	0.5	0.9	0.5	1.2	0.2	1.5	0.6	0.7	0.9	0.8	208
Genus Etmopterus	ETM	0.4	0.3	0.2	0.4	0.4	0.7	0.8	0.8	0.1	0.3	0.5	128
Ruvettus pretiosus	RUP	0.4	0.2	0.6	0.1	0.7	0.2	0.4	0.2	1.9	0.5	0.4	104
Tetrapturus angustirostris	SHS	0.8	0.2	0.8	0.2	0.1	0.0	0.5	0.1	0.1	0.0	0.4	94
Sphyrna zygaena	SZY	0.2	0.2	0.5	0.2	0.6	0.1	0.5	0.3	1.0	0.9	0.3	92
Istiophorus platypterus	SAP	0.4	0.2	0.4	0.3	0.3	0.1	0.4	0.2	0.1	0.9	0.3	86
Acanthocybium solandri	WAH	0.4	0.2	0.2	0.2	0.4	0.1	0.5	0.4	0.4	0.0	0.3	84
Dasyatidae family	FDA	0.2	0.4	0.3	0.4	0.0	0.0	0.3	0.3	0.0	0.0	0.3	67
Thunnus alalunga	ALB	0.1	0.2	0.0	0.1	0.1	0.6	0.1	0.3	0.1	0.5	0.2	48
Alepisaurus rostratus	ALX	0.1	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.0	0.0	0.2	44
Makaira nigricans	BUM	0.1	0.1	0.3	0.1	0.2	0.0	0.2	0.0	0.3	0.0	0.1	32
Sphyrna tiburo	SPB	0.2	0.1	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.2	0.1	30
Sphyrna tiburo	SLE	0.2	0.0	0.1	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.1	29
Gempylus serpens	GES	0.1	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.1	0.2	0.1	21
Makaira indica	BLM	0.1	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	17
Carcharhinidae family	FCA	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	16
Sphyrnidae family	FSP	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	12
Katsuwonus pelamis	SKJ	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	12
Manta birostris	MBA	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	11
Mobula mobular	MOM	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	11
Dermodonax coriacea	DCC	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	9
Carcharhinus obscurus	DUS	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	9
Galeocerdo cuvieri	GCU	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9
Istiophoridae family	FIS	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	8
Mola mola	MMO	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	7
Moridae family	FMO	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	6
Lampris guttatus	LAG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	6
Alopias superciliosus	ASU	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	5
Masturus lanceolatus	MAL	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
Tetrapturus audax	STM	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	5
Lagocephalus lagocephalus	LLA	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	4
Bramidae family	BRA	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3
Caretta caretta	CCC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Alopiidae family	FAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Lamnidae family	FLA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Dasyatis centroura	RDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Unidentified turtle scales	TOE	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Elagatis bipinnulata	ELP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Globicephala melas	GME	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Isurus paucus	LMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Naucrates ductor	NAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Unidentified shark	REX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Tetrapturus albidus	WHM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Seriola lalandi	YTC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1

Table 1 - Catch ratios, in numbers of specimens per 1000 hooks used for type of bait and total catch ratio, and total catch (number) for each species, in the first part of the Spanish AP 08/2004 in Indian Ocean waters.