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PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS

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NEW CALEDONIA

WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

5th Scientific Committee Meeting
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NEW CALEDONIA - ANNUAL REPORT 2008
Part 1

Summary:

Fishing for tuna and associated species by New Caledonian vessels started in 1981 with pole-and-line (less than 3 vessels) which stopped very rapidly (1981: 228 mt; 1982: 998 mt; 1983: 492 mt).

Longliners started operating at the same time and it took almost 20 years before this domestic fleet had a significant activity.

In 2008, 23 domestic longliners fished in the New Caledonian ZEE. No licenses have been issued to foreign vessels since early 2001.

A 14% increase in the catch was reported last year as a consequence of a similar increase of fishing effort. The annual catch of 2384 mt was mainly composed of the target species, albacore, with 62% of the total (1506 mt). Yellowfin was second (424 mt and 18%).

Catches of sharks have been decreasing since 2006, due to an increasing use of monofilament branchlines.

After the appointment of a new program coordinator under the SciFish project port sampling and observer activities resumed mid-2008, reaching a 9.5% coverage of all longline sets for the second half of the year. The main objective of these activities is to collect information to be checked with the other sources of data, particularly logsheets.

Through the ZoNéCo program New Caledonia also continues to participate in the regional efforts to improve the knowledge of the tuna behaviour, in particular the South Pacific albacore as the species of major interest for its fishery.

Catch statistics

As a counterpart to their licenses the New Caledonian fishing companies must provide logsheets which are collected at the end of the trips. The coverage rate of logsheets is considered as nearing 100%.

In accordance with the provision of scientific data to the Commission all the logsheets data are made available to the SPC/OFP on an annual basis.

The effort and catch statistics in table 1 (see annex) are derived from these logsheets.

The total production of 2380 mt in 2008 represents a 14% increase from the 2007 level, reflecting the increase of fishing effort on the same period.

As the target species of the New Caledonian tuna fisheries, the South Pacific albacore remains the predominant species in the catch with 62% in weight, followed by yellowfin (18%).

In 2008, the average weight of albacore was 17.7 kg per fish, similar to the 5 last years and 27.4 kg for yellowfin, just a little bit higher than the long term average for that species.

There is no vessel targeting bigeye, sharks, marlins or swordfish. Therefore, all the catch reported for these species are bycatch.

All the mainlines are made of monofilament, as well as the branchlines. Since these lines can easily be cut by the sharks offloading of these species have significantly dropped down over the past 3 years. The shortfin mako is the only shark retained and sold for human consumption in New Caledonia, totaling less than 15 mt in 2007 and 2008.

Many species show seasonal patterns in their abundance around New Caledonia which induces similar fluctuations in the catch levels and average weight reported (see table 3 and figure 3 in annex).

Fleet structure and fishing activity

In 2008, 27 domestic tuna longliners were licensed to fish but only 23 of them had been active. Similarly to past years there were no foreign vessels authorized to operate in the New Caledonian EEZ.

Table 2 in annex shows that 7 active vessels in 2008 are less than 50 tons. These vessels have limited cruising range. Although the larger longliners can stay at sea for two or more weeks, the average trip length for the whole fleet is only 10 days of which 6 or 7 are fished.

410 fishing trips were reported in 2008, 3% more than in 2007, and the total number of fishing days has increased by 9%. 5 million hooks were used, in increase of 20% compared to 2007, so that the fishing effort reached again its 2005 levels.

Monitoring activities

Port sampling and observer activities have been carried out in New Caledonia for more than 20 years. However, they have benefited from dedicated funding only for a few years under the ProcFish and SciFish programs.

Observer activity

From June to December 2008 11 trips were observed onboard the domestic vessels of 4 companies, representing 138 days at sea and 4615 fish observed. Over this period of time the observer activity covered about 9.5% of all longline sets. The detailed data are provided in table 4 in annex.

Shark species, except the shortfin mako which account for 16 % of the non commercial catch (figure 4), are usually released at sea if they are captured alive. If dead at capture their fins may be removed by the crew.

During trips observed in the second half of 2008, only one dead olive ridley turtle was incidentally captured.

Port sampling activity

From June to December 2008, 17720 fish during 88 samples in the ports of New Caledonia which makes up a total of 282384 fish sampled since early 2002 (see table 5 for data).

Vessel Monitoring System

New Caledonia has been operating a Vessel Monitoring System since early 2005.

All licensed vessels in the EEZ must have a transmitter on board. Due to safety regulations all of them are equipped with Inmarsat-C terminals but some vessels also have a dedicated Argos beacon on board.

A daily monitoring is carried out by the New Caledonia fisheries department, which helps:

a. check the VMS data with the number of logsheets provided by the fishing companies
b. the French Navy to survey the EEZ.

Scientific and technical research

Relationships between climatic signals and tuna stocks dynamics in the EEZ of New Caledonia

A 2 year multi-disciplinary study on relationships between climatic signals and the dynamics of tuna stocks in the EEZ of New Caledonia has reached its first conclusions. The project consisted of an ecosystemic approach of tuna dynamics by integration of a series of models describing the physical and biogeochemical environment, tuna forage, tuna biomass and fishing capture. The analysis was concentrated on the current climate regime and its seasonal variability in order to establish the dominant connections between tuna and their environment.

In the first stage of the project a space-time analysis on fine structures of the physical and biogeochemical variables (primary production, dissolved oxygen) was undertaken using coupled physical-biogeochemical model (ROMS-PISCES). The model produced a refined vertical structure of primary production around New Caledonia EEZ showing a strong influence of the regional circulation on nutrient enrichment and primary production. A communication on this first component of the project was presented at the Western Pacific Geophysics Meeting in Cairns, Australia (Vincent Faure, 29 July - 1 August 2008) and a scientific article is in preparation.

The second part of the project consisted in connecting the coupled physical-biogeochemical model with a tuna dynamics model (SEAPODYM) in order to produce an integrated modelling system from the physics to the top predators. A large part of the project was dedicated to model implementation and validation: adjustment of the tuna model parameters (and empirical functions) to the albacore species; validation of the results using fishing capture data; and optimization of modelled parameters of the capture process to further improve the model performances. A further and original improvement was achieved by refining the model resolution (from 2° to 1/3°) in the New Caledonia area using an embedding technique.

The results show that the integrated model is able to reproduce the observed large-scale pattern of tuna dynamics consisting of seasonal migration between feeding habitats in the south (New Zealand latitude) and spawning habitats in the north (10-15°S). The EEZ of New Caledonia appears as a spawning rather than feeding habitat, although it can locally attract tuna for feeding. These results have been presented at the Pelagic Fisheries Research Program meeting in Hawaii (X. Couvelard, 18-19 November 2008). These results will appear in the final ZoNéCo report and be also reported in a scientific journal.

Analysis of interannual variability of tuna dynamics in relation to the environment should be the next step. Then climate change projections using IPCC climate models as forcing parameters will provide a scenario of climate impact in the New Caledonia region.

Table 1: estimates of days fished and catch by species from New Caledonian longliners in the WCPFC area

Metric tonnes of	2004	2005	2006	2007	2008 (*)
South Pacific Albacore	1468	1590	1358	1324	1506
Yellowfin	631	448	414	393	424
Bigeye	90	76	35	53	63
Striped Marlin	63	74	54	63	103
Marlins	58	50	37	47	47
Swordfish	17	12	10	19	15
Mako shark	34	26	14	13	13
Others	255	197	187	210	213
TOTAL	2616	2473	2108	2122	2384
Days fished	3399	2836	2134	2531	2749

*: preliminary data

Figure 1: historical annual catch by the New Caledonia longliners (from logsheets) in the WCPFC area

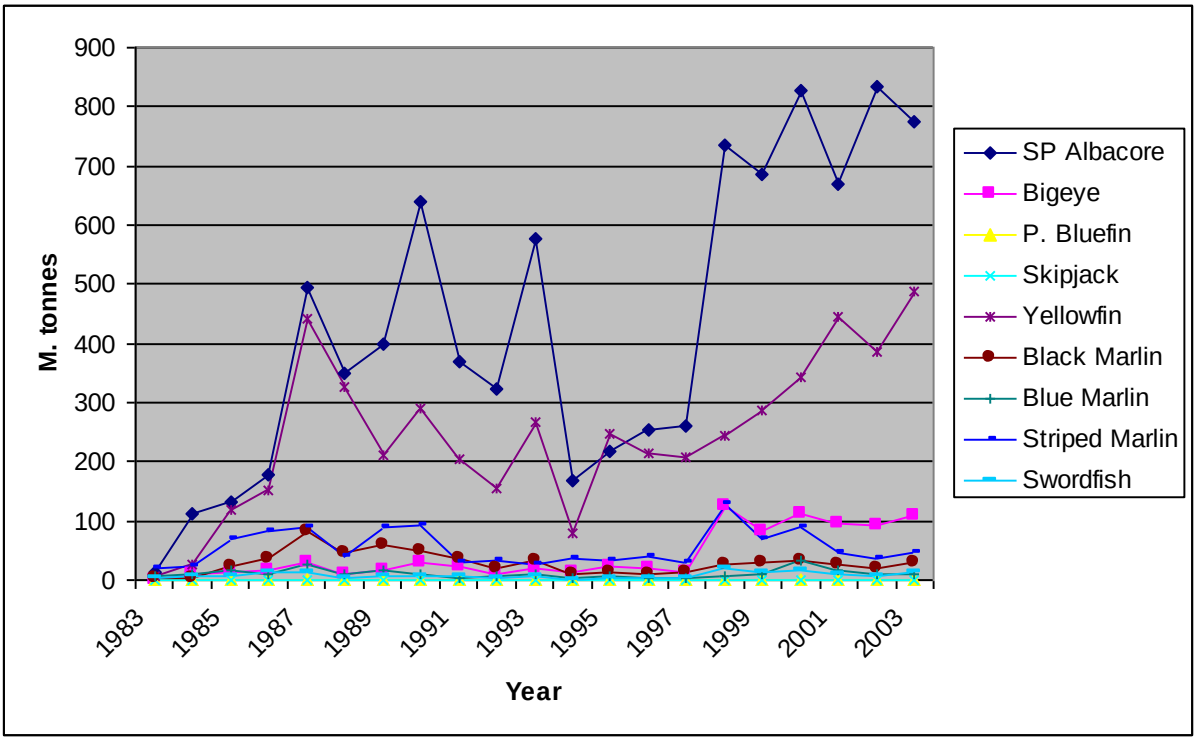

Figure 2: New Caledonia longline fleet

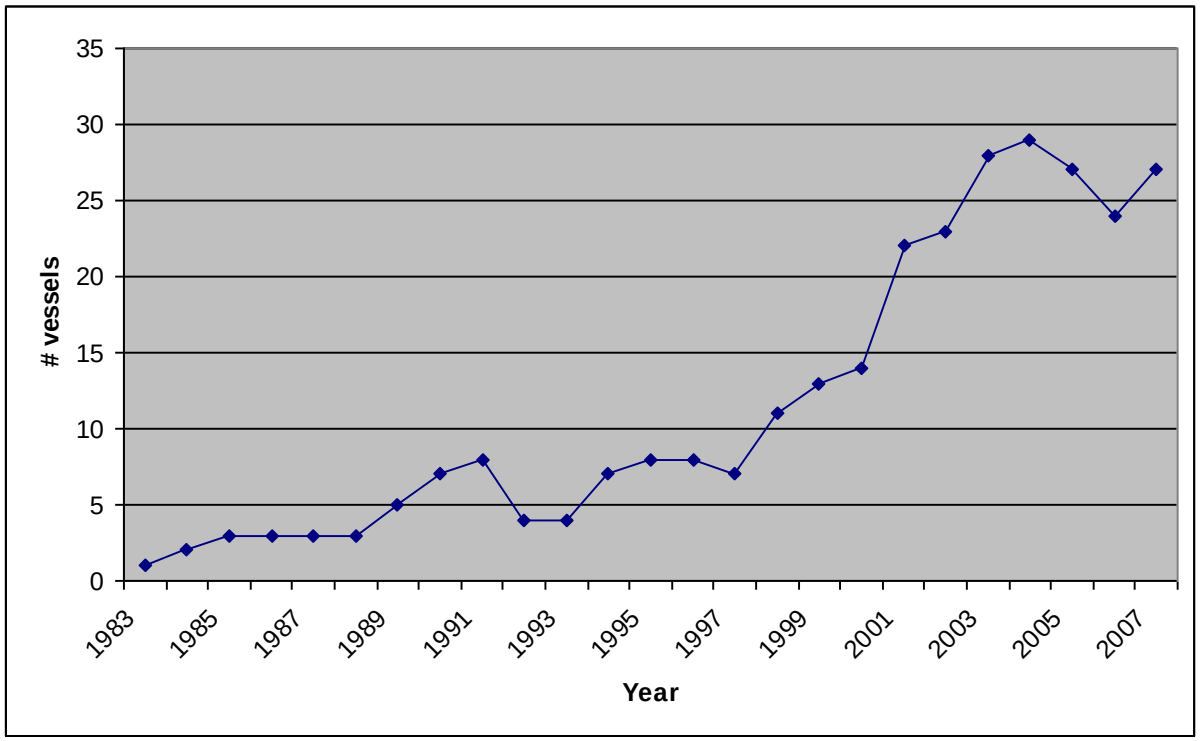

Table 2: number of domestic longliners active by GRT class

	0-50	51-100	100+
2005	8	15	0
2006	8	9	4
2007	8	11	4
2008	7	11	5

Table 3: number of fish caught per month in 2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Albacore	4123	3264	2424	3893	5176	8145	11064	13078	7617	8087	5788	12334
Yellowfin	1842	1501	2250	2421	1608	941	572	987	915	805	849	772
Bigeye	52	105	158	157	196	302	187	152	183	143	53	39
Others	1222	1042	968	886	734	1099	922	838	1387	1249	3109	3989
TOTAL	7239	5912	5800	7357	7714	10487	12745	15055	10102	10284	9799	17134

Figure 3: monthly weight of albacore, yellowfin and bigeye in 2008

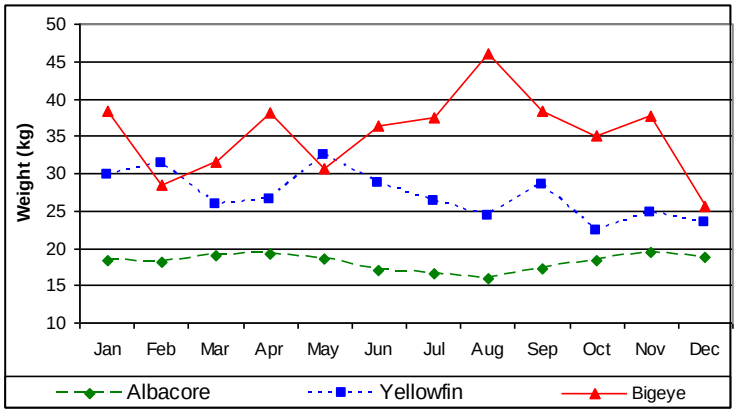

Table 4: number of observed species in 2008

Code	Species	Nb
ALB	ALBACORE	3459
ALO	SHORTSNOUTED LANCETFISH	7
ALX	LONGSNOUTED LANCETFISH	131
BAB	BLACKFIN BARRACUDA	6
BET	BIGEYE	36
BLM	BLACK MARLIN	7
BRZ	POMFRETS AND OCEAN BREAMS	3
BSH	BLUE SHARK	32
BTH	BIGEYE THRESHER	1
BUM	BLUE MARLIN	13
DOL	MAHI MAHI / DOLPHINFISH / DORADO	259
FAL	SILKY SHARK	3
GBA	GREAT BARRACUDA	56
GES	SNAKE MACKEREL	6
LAG	OPAH (MOONFISH)	78
LEC	ESCOLAR	10
LGH	RABBIT PUFFER	1
LKV	OLIVE RIDLEY TURTLE	1
LMA	LONGFIN MAKO	3
LOP	CRESTFISH/UNICORNFISH	1
MLS	STRIPED MARLIN	73
OCS	OCEANIC WHITETIP SHARK	2
PBF	PACIFIC BLUEFIN TUNA	3
PLS	PELAGIC STING-RAY	11
PRP	ROUDI ESCOLAR	4
PSK	CROCODILE SHARK	1
PTH	PELAGIC THRESHER	4
RZV	SLENDER SUNFISH	2
SFA	SAILFISH (INDO-PACIFIC)	1
SKJ	SKIPJACK	73
SMA	SHORT FINNED MAKO	22
SSP	SHORT-BILLED SPEARFISH	26
SWO	SWORDFISH	6
SXH	BLACK MACKEREL	1
TIG	TIGER SHARK	2
WAH	WAHOO	60
YFT	YELLOWFIN	211

Figure 4: proportion of shark and ray species recorded by observers in 2008

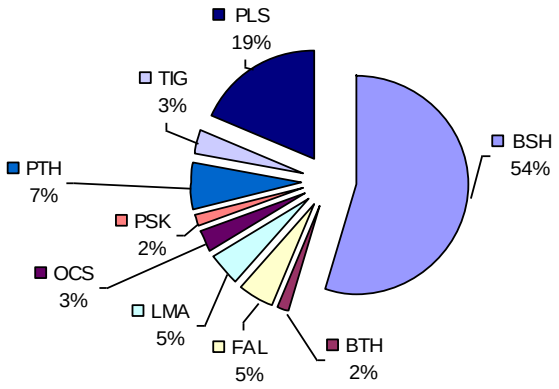

Table 5: number of fishes sampled in 2008, by species

	Tuna				Billfishes						
Species	ALB	YFT	BET	PBF	MLS	SSP	BLM	SWO	SFA	BUM	BIL
Number of fishes sampled	12796	1707	359	3	308	140	47	40	18	12	5

	Other commercial species					
Species	DOL	LAG	WAH	SMA	BRZ	TST
Number of fishes sampled	1255	690	270	64	5	1

Figure 5: composition of port samples in 2008