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PART 1 : INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS

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NEW CALEDONIA

WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

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NEW CALEDONIA - ANNUAL REPORT 2009
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 2009, 21 domestic longliners fished in the New Caledonian ZEE. No licenses have been issued to foreign vessels since early 2001.

A 7% increase in the catch was reported last year as a consequence of a similar increase of fishing effort. The annual catch of 2545 mt was mainly composed of albacore which accounts for 65% of the total (1649 mt). Yellowfin was second (487 mt and 19%).

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 respectively 41% and 8% coverage of the longline sets in 2009. 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. These data for year 2009 were so provided on the 15th of February, 2010.

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

The total production of 2545 mt in 2009 represents a 7% increase from the 2008 level and the second highest catch of 2616 mt recorded in 2004.

As the target species of the New Caledonian tuna fisheries, the South Pacific albacore remains the predominant species in the catch with 65% in weight (1649 mt). Yellowfin is the second (487 mt and 19%).

In 2009, the average weight of albacore was 17.8 kg per fish, similar to that of the last five years, and 28.6 kg for yellowfin, a little bit higher than the long term average for that species.

No New Caledonian vessel targets bigeye, sharks, marlins or swordfish. Therefore, all the catch reported for these species are bycatch.

The shortfin mako is the only shark retained and sold for meat consumption in New Caledonia, totaling less than 15 mt in both 2008 and 2009. A new fishery regulation is currently being prepared which would ban shark-fining in the EEZ.

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

Fleet structure and fishing activity

In 2009, 27 domestic tuna longliners were licensed to fish but only 21 of them had been active. Similarly to past years there were no foreign vessels authorized to operate in the New Caledonian EEZ.

Table 2 shows that 6 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.

Like 2008, the 2009 fishing effort reached its 2005 level, with 411 fishing trips reported, almost 4000 days fished and 5 million hooks used.

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

In 2009, 28 trips were observed by 2 observers onboard the vessels of 3 domestic companies, representing 307 days at sea and almost 11000 fish observed. Over this period of time the observer activity covered about 8% of all the longline sets. The detailed data are provided in table 4 in annex.

Shark species, except the shortfin mako which account for 17% 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 2009, only one green turtle (*Chelonia mydas)* was incidentally captured.

Port sampling activity

In 2009, 169 samplings were carrying out in the ports of New Caledonia totalling almost 38500 fish which makes up a total of 320 853 fish sampled since early 2002 (see table 5).

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

The ZoNéCo programme has been contributing to the longline fisheries development since 1999 by undertaking studies on the optimization of fishing techniques as well as the physical and biological environment of the main exploited species in New Caledonia.

A study by Karine BRIAND (SPC) allowed for a first approach about the influence of the environmental parameters influencing the longline fisheries yield. This project consisted of an ecosystemic approach of tuna dynamics by integration of a suite of models describing the physical and biogeochemical environment, tuna forage, tuna biomass and fishing captures. Its results indicate that the integrated model is able to reproduce the large scale observed pattern of tuna dynamics consisting of seasonal migration between their feeding habitat in the South

and spawning habitat in the North. The EEZ of New Caledonia appears as a spawning rather than feeding zone, although it can locally attracts tuna for feeding.

The more recent study leaded by Patrick MARCHESIELLO (IRD) was a follow-up to the previous one. It has proposed to examine finely the influence of the environnemental parameters on the albacore tuna behaviour and distribution. A chain of model was developed integrating at once the physico-chemical parameters of the ocean and the biological parameters of the albacore tuna and its associated preys. The principal objective is the identification of the environmental parameters which determine the distribution and dynamics of the albacore population in western South Pacific with refinement to the New Caledonia EEZ.

The oligotrophic character of the western South Pacific was put in evidence. New Caledonia appears as the center of this region which is one of the poorest of the world. The anticyclonic circulation, which produces a depression of the thermocline and nutricline, is the main cause. On the other hand, the presence of warm water in the region seems favorable to the habitat environment for albacore spawning. Data collected by the IRD, and more particularly those from the campaign ZONALIS (carried out within the framework of the ZoNéCo project), confirm this result.

At the South Pacific scale, the model produced encouraging results however difficult to validate. The lack of accurate information on the micronecton can produce contradicting results. However, the model used for micronecton seems to supply an intermediate appropriate level for tuna whose modelled biomass shows strong correlations with the actual captures. It would be important to better validate the micronecton compartment of the model.

In the New Caledonia EEZ, the d of a model with fine stitches besides allowed to highlight the following points:

- The New Caledonia benefits from a favorable environment for the adults, particularly in winter (spawning season).

- There is an optimal window of concentration of preys for tuna catch. The reported captures seem to coincide with intermediate values of prey concentration rather than with maximal values. It would be opportune to study this issue in deep.

- Because of the drift of the surface tropical waters southward and deeper impact of the anticyclonic circulation, the epi and meso pelagic temperatures are particularly warm in the New Caledonian region. These warm waters seem to have a positive impact on the habitat for albacore spawning and feeding and strongly contribute to explain their presence in this region.

- The same phenomenon tends to induce the oligotrophy of the region, but the local concentration of preys seems more influenced by the process of divergence / convergence of the currents interacting with the islands, than by the spatial distribution of the phytoplankton.

Although the study have given numerous knowledge elements on the environmental parameters of the New Caledonia EEZ and their influence on the tuna behaviour, this work still does not allowed to understand the distribution of albacore at the New Caledonia EEZ scale. The lack of knowledge on the micronecton (fauna constitution, biomass, and spatial distribution which determine largely the behaviour of the tuna) is the major reason.

The next ZoNéCo study: “albacore tuna in the EEZ: observing and modeling its habitat and migrations to better understand its distribution” which began in 2010, will attempt to observe and to model the micronecton, to improve understanding of its functioning, influence and importance, with the objective to understand the determinism and the average distribution, both seasonal and interannual, of tuna in the New Caledonia EEZ.

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

Metric tonnes of	2005	2006	2007	2008	2009 (*)
South Pacific Albacore	1590	1358	1324	1506	1649
Yellowfin	448	414	393	424	487
Bigeye	76	35	53	62	51
Striped Marlin	74	54	63	103	71
Black Marlin	28	24	35	39	33
Blue Marlin	21	9	11	9	9
Swordfish	12	10	19	15	7
Mako shark	26	14	13	14	10
Others	197	187	210	216	228
TOTAL CATCH	**2472**	**2105**	**2121**	**2388**	**2545**
DAYS FISHED	**2836**	**2134**	**2531**	**2751**	**2674**

*: preliminary data

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

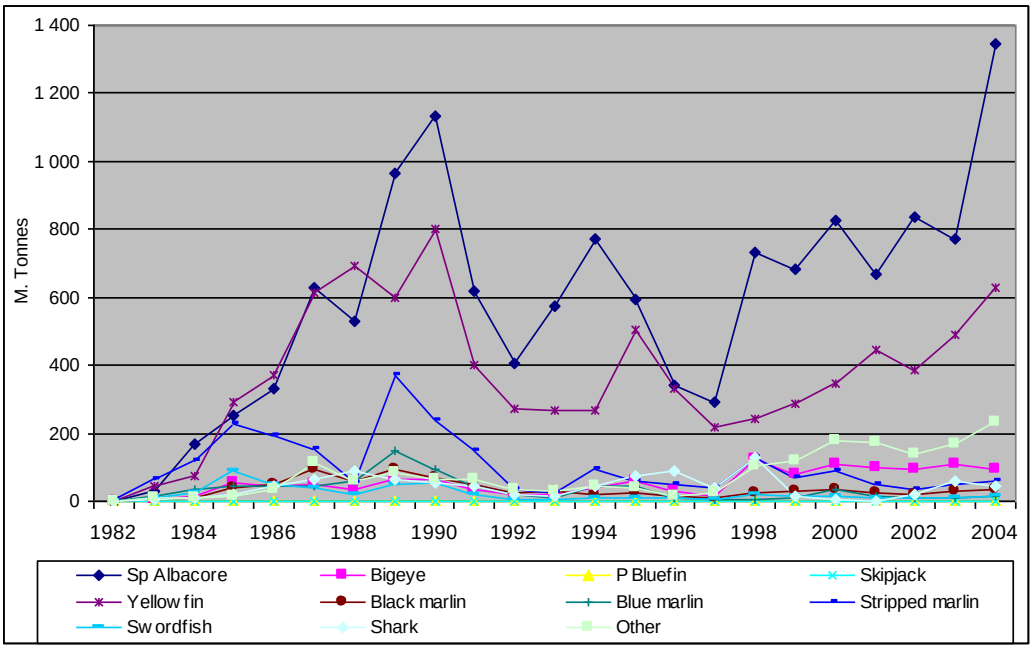

Table 2: number of domestic longliners active by GRT class

	0-50	51-100	100+
2005	8	15	0
2006	8	9	4
2007	8	11	4
2008	7	11	5
2009	6	10	5

Figure 2: New Caledonia longline fleet

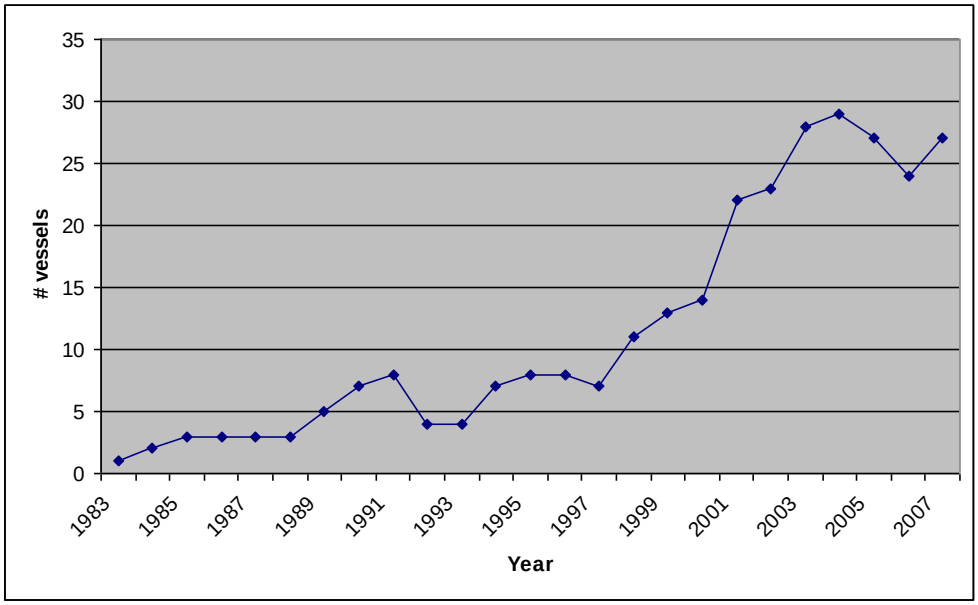

Table 3: number of fish caught per month in 2009

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SP Albacore	4087	5948	5818	4496	5949	14081	12054	9310	8387	4931	8842	8584
Yellowfin	1228	1949	2217	2711	2144	651	1178	1094	913	728	807	1 425
Bigeye	39	96	161	121	198	250	117	115	99	51	87	65
Marlin	155	77	84	43	85	50	89	80	79	194	247	266
Others	2393	1480	1430	1 085	1460	1557	1186	903	1345	1666	2392	2816
Total	**7902**	**9550**	**9710**	**8456**	**9836**	**16589**	**14624**	**11502**	**10823**	**7570**	**12375**	**13156**

Figure 3: monthly weight of albacore, yellowfin and bigeye in 2009

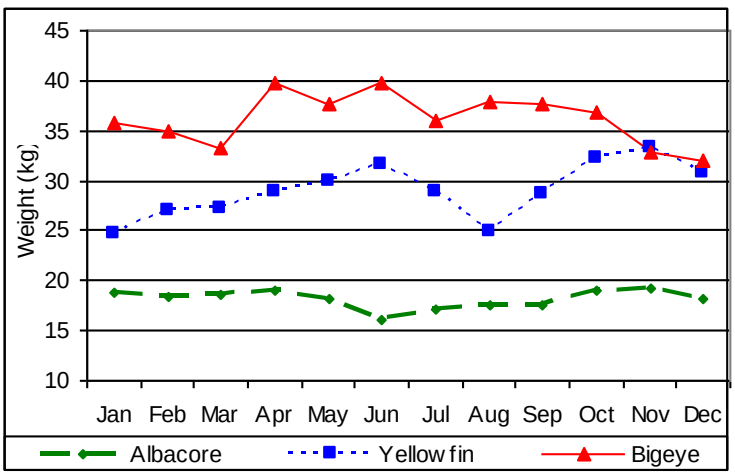

Table 4: number of observed species in 2009

Code	Species	Nb
ALB	ALBACORE	7126
ALO	SHORTSNOUTED LANCETFISH	5
ALV	COMMON THESHER	9
ALX	LONGSNOUTED LANCETFISH	1275
AML	GREY REEF SHARK	14
ASZ	RAZORBACK SCABBARDFISH	2
BAB	BLACKFIN BARRACUDA	1
BET	BIGEYE	174
BLM	BLACK MARLIN	20
BLR	BLACKTIP REEF SHARK	1
BRZ	POMFRETS AND OCEAN BREAMS	9
BSH	BLUE SHARK	277
BTH	BIGEYE THRESHER	1
BUM	BLUE MARLIN	5
CCE	BULL SHARK	2
CCP	SANDBAR SHARK	5
COM	NARROW-BARRED SPANICH MACKEREL	4
DOL	MAHI MAHI / DOLPHINFISH / DORADO	1048
EBS	BRILLANT POMFRET	3
FAL	SILKY SHARK	35
GBA	GREAT BARRACUDA	198
GEP	OTHER GEMFISH	4
GES	SNAKE MACKEREL	17
GSE	GOLDENSTRIPED SOAPFISH	2
LAG	OPAH (MOONFISH)	87
LEC	ESCOLAR	110
LGH	RABBIT PUFFER	36
LMA	LONGFIN MAKO	8
LOP	CRESTFISH/UNICORNFISH	2
MLS	STRIPED MARLIN	69
MOX	OCEAN SUNFISH	2
NEN	BLACK GEMFIH	8
OCS	OCEANIC WHITETIP SHARK	4
OIL	OILFISH	2
PLS	PELAGIC STING-RAY	123
POA	ATLANTIC POMFRETS	3
-	PUFFERS	9
PSK	CROCODILE SHARK	2
PTH	PELAGIC THRESHER	3
EHN	LIVE SHARKSUCKER	2
RZV	SLENDER SUNFISH	1
SFA	SAILFISH (INDO-PACIFIC)	9
SHK	OTHER SHARKS	1
SHW	SHORT-FINNED PILOT WHALE	1
SKJ	SKIPJACK	610
SMA	SHORT FINNED MAKO	26
SNK	SNOEK	1
SPZ	SMOOTH HAMMERHEAD	1
SSP	SHORT-BILLED SPEARFISH	95
SWO	SWORDFISH	17
SXH	BLACK MACKEREL	4
TIG	TIGER SHARK	6
TRB	WHITETIP REEF SHARK	3
TST	SICKLE POMFRET	3

TUG	GREEN TORTLE	1
WAH	WAHOO	228
YFT	YELLOWFIN	1505
Total		**13219**

Figure 4: proportion of shark and ray species recorded by observers in 2009

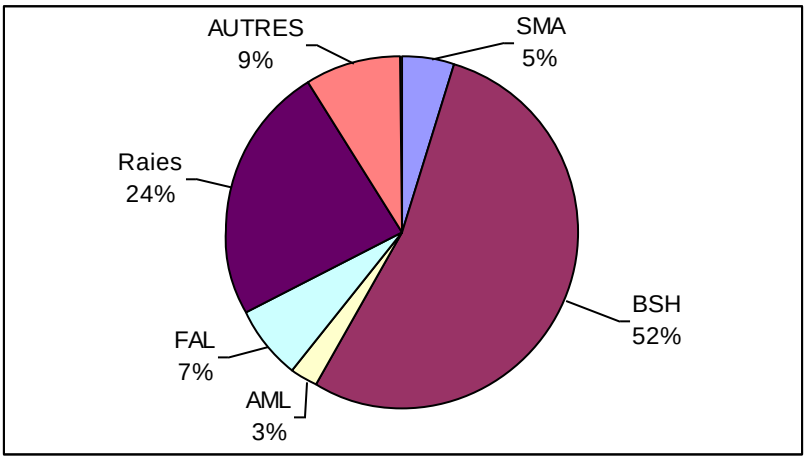

Table 5: number of fish sampled in 2009, by species

	Tuna			Billfishes					
Species	ALB	YFT	BET	MLS	SSP	BLM	BUM	SWO	SFA
Number of fish sampled	27 605	4 764	374	279	256	117	33	30	15

	Other commercial species					
Species	DOL	WAH	LAG	SMA	BRZ	COM
Number of fish sampled	3467	934	517	69	6	3

Figure 5: composition of port samples in 2009