



**SCIENTIFIC COMMITTEE
SEVENTEENTH REGULAR SESSION**

ELECTRONIC MEETING
11-19 August 2021

ANNUAL REPORT TO THE COMMISSION
PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

WCPFC-SC17-AR/CCM-15

NEW CALEDONIA

ANNUAL REPORT TO THE COMMISSION

PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

NEW CALEDONIA - 2020

Technical report written by the fisheries and natural park of the Coral sea department of the
New Caledonian Government

Scientific data were provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission on the 30th April 2021	YES
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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).

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

The New-Caledonian fleet operates in the new caledonian EEZ exclusively.

In 2020, the New Caledonia government has granted 19 licences to longliner vessels. At the end of the year, one fishing company finished the renewal of its fleet: three ships were sold and replaced by new ones. These last three fished in November and December 2020. Also, one vessel exited the fishing fleet in March 2020 due to damages caused by a tropical depression.

All of those licensed domestic longliners were active. Similarly to past years there were no foreign vessels licensed or chartered to operate in the New Caledonian EEZ.

In 2020, the total catch was lower (-7%) compared to 2019. The annual catches of 2 658 mt were mainly composed of albacore, one of the target species of all the vessels and accounted for 71% of the total catches (1 899 mt). Yellowfin was second with 514 mt (19% of the total catch). Striped marlin is the main bycatch of the fishery (81 mt; 3% of the total catch).

Catches of sharks have been decreasing since 2006, due to an increasing use of monofilament branch lines and the adoption of a regulation in April 2013 prohibiting the catch, the disturbance and the retention on-board of any shark or ray.

In 2020, observer activities carried out under the New Caledonia Program punctually reached a 7.3% coverage rate of the longline hooks. The aim of this activity is to collect information to be checked with other sources of data and to provide accurate data for stock assessments (biological samples, size composition, estimates of incidental catch).

During all the trips observed in 2020, there were 1 manta ray, 2 sea turtles and 2 sea birds interactions.

The incidental catches of shark and ray species were reported by the Observer Program at 806 individuals in 2020 (including 85 rays).

Finally, a PIRFO training course was carried out and allowed the training of 7 new observers who could be called upon from time to time by the Fisheries Observers Program.

2. Background

Longline fishing was introduced to the Pacific and New Caledonia by the Japanese in 1930s. After World War II, several fishing bases were established throughout the Pacific and the number of Japanese longliners operating increased to 200 vessels by the 1960s. Until then, the longliners targeted albacore tuna for canneries, but from 1970, the Japanese turned to fishing for tuna closer to the equator, such as yellowfin and bigeye tuna.

From 1978, the year of creation of the Exclusive Economic Zone (EEZ) of New Caledonia, foreign fishing was subject to the prior signature of bilateral agreements between the fishing countries and France. Successive Franco-Japanese agreements were signed until 2001, by which time Japanese fishing had almost disappeared from the new caledonian EEZ.

The development of the domestic longline fleet started in 1983 and the early 2000s saw a significant increase in the number of longline vessels. However, from 2003 onwards, the lack of skilled manpower led to an under-utilisation of the vessels and several fishing companies stopped their activity.

The number of fishing vessels continued to decrease gradually until 2013, when the fleet stabilised at around 6 to 7 fishing companies and 16 to 18 active longliners per year.

3. Flag State Reporting

3.1. Fleet and activity

In 2020, 22 licensed domestic longliners were active. However, one of them had to stop its activity because of severe damage due to a tropical depression in March 2020 and a fishing company, who began the renewal of its fleet in 2018, received the last 3 vessels in late 2020. The real number of active vessels in EEZ in 2020 is 19 (**Figure 1** and **Table 1**).

All active vessels in 2020 are less than 200 tons GRT (**Table 1**). These vessels have limited cruising range within the EEZ. The larger longliners nearing 150 tons can stay at sea for two or more weeks. Fishing campaigns last on average 12 days and fishing activity lasts on average 8 days.

370 fishing trips were reported in 2020, totalling 4,319 days at sea (+11% compared to 2019), 2,819 fishing days (+13% compared to 2019) and 6.1 million hooks (+17% compared to 2019). This increase in fishing activity is the consequence of the annual activity in 2020 of the 3 vessels that joined the fleet in July 2019.

As previous years, no fishing activity by the New Caledonian fleet neither north of the equator, nor south of 30° South was reported.

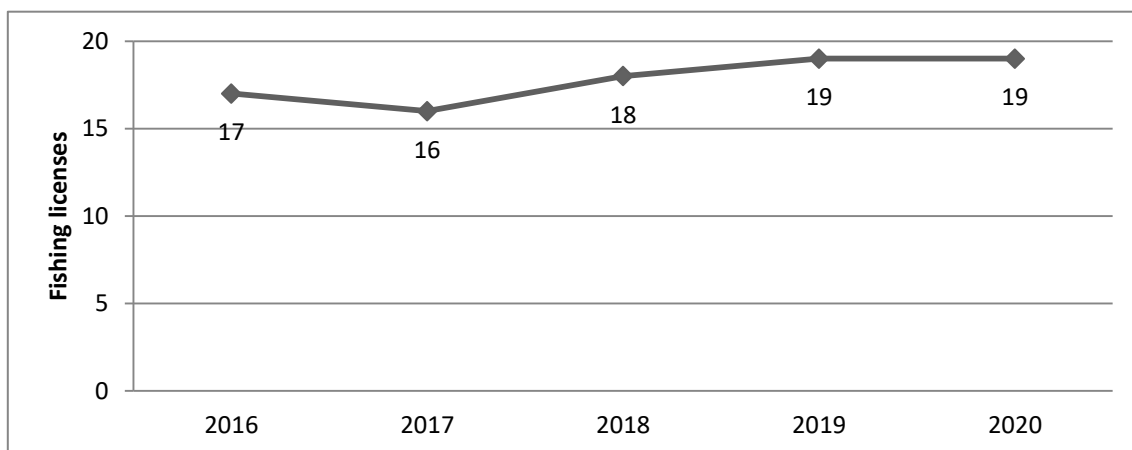


Figure 1: Historical New Caledonian longline licensed vessels

Table 1: Historical number of domestic active longliners by GRT class in New Caledonia

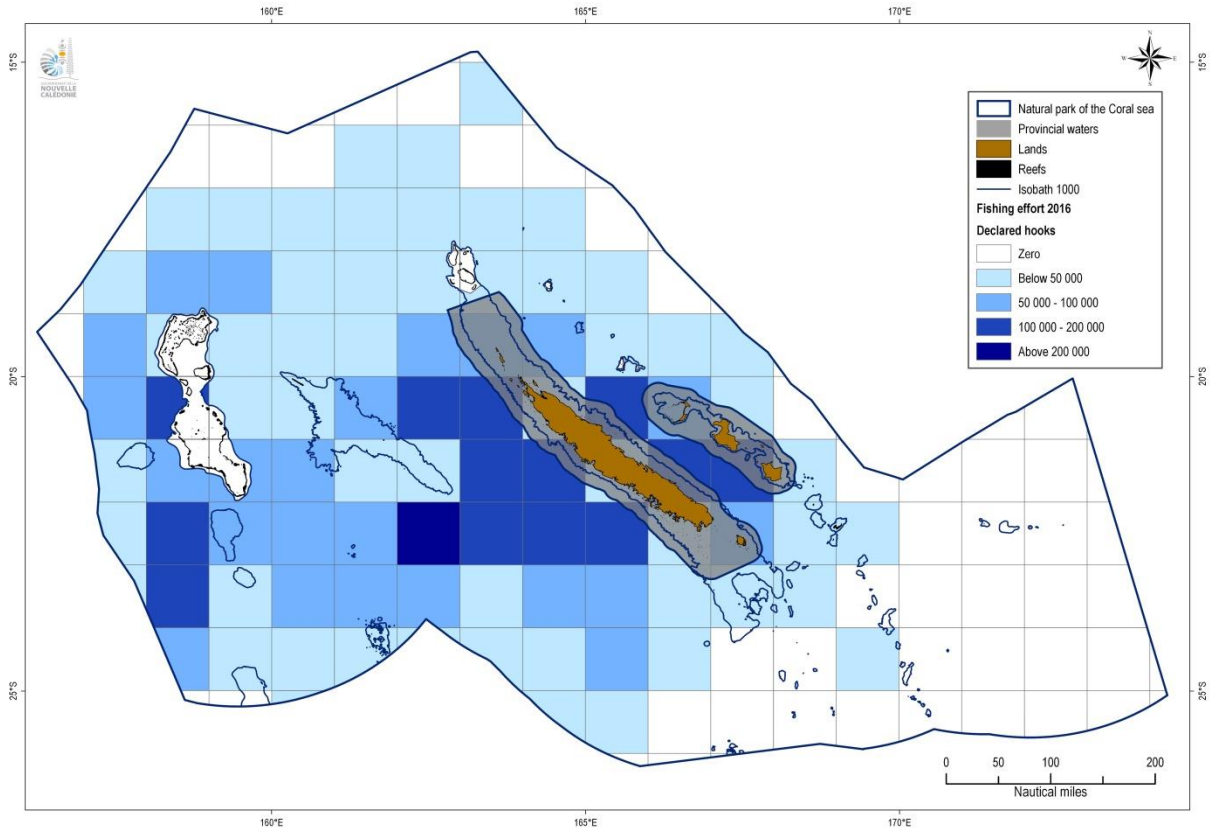
Vessel by GRT	0-50	51-200
2016	1	16
2017	1	15
2018	1	17
2019	1	18
2020	1	18

3.2. Fishing patterns

Fishing patterns vary with season and catches of targeted species. With catches of albacore tuna declining each year during the months of March to May and September to November in new caledonian waters, fishing companies target yellowfin tuna around the reefs of the EEZ during these months.

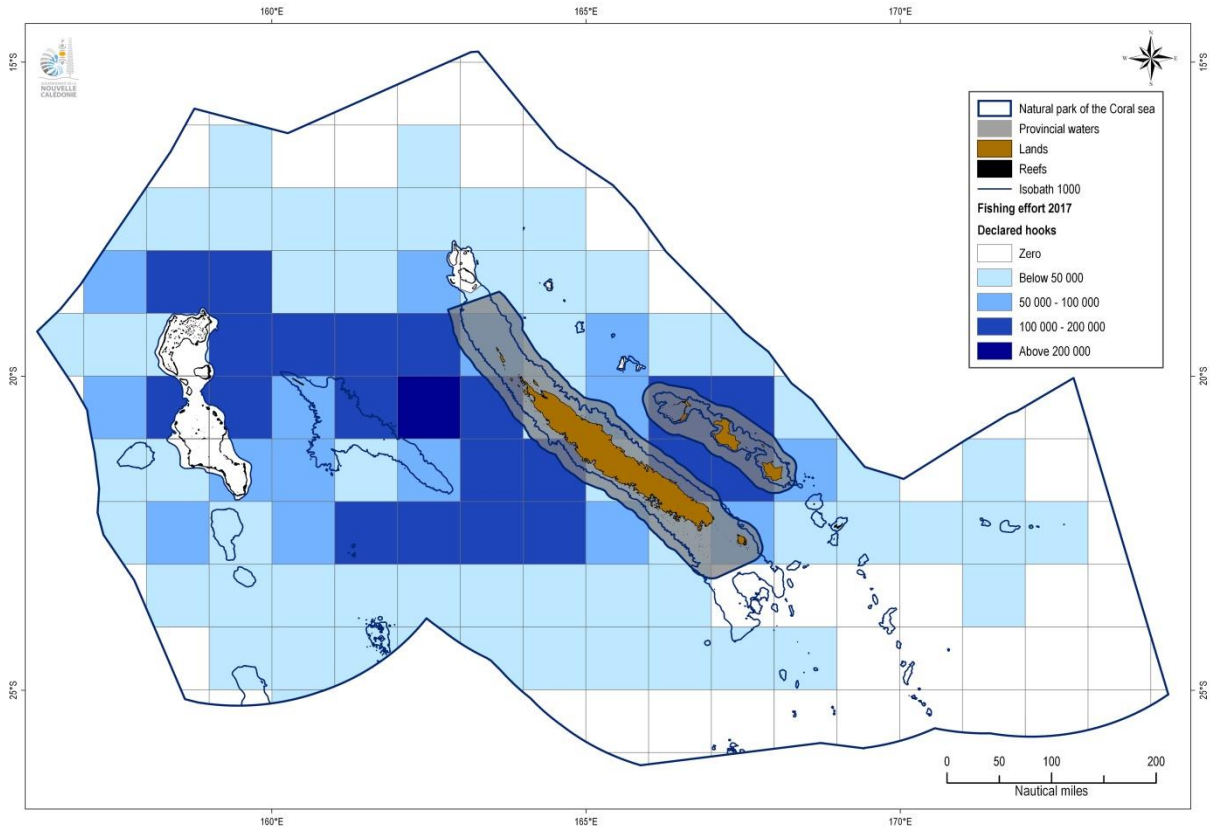
Figure 2 (a-e) below show the annual fishing effort of domestic longliners in New Caledonia EEZ from 2016 to 2020.

a) – 2016



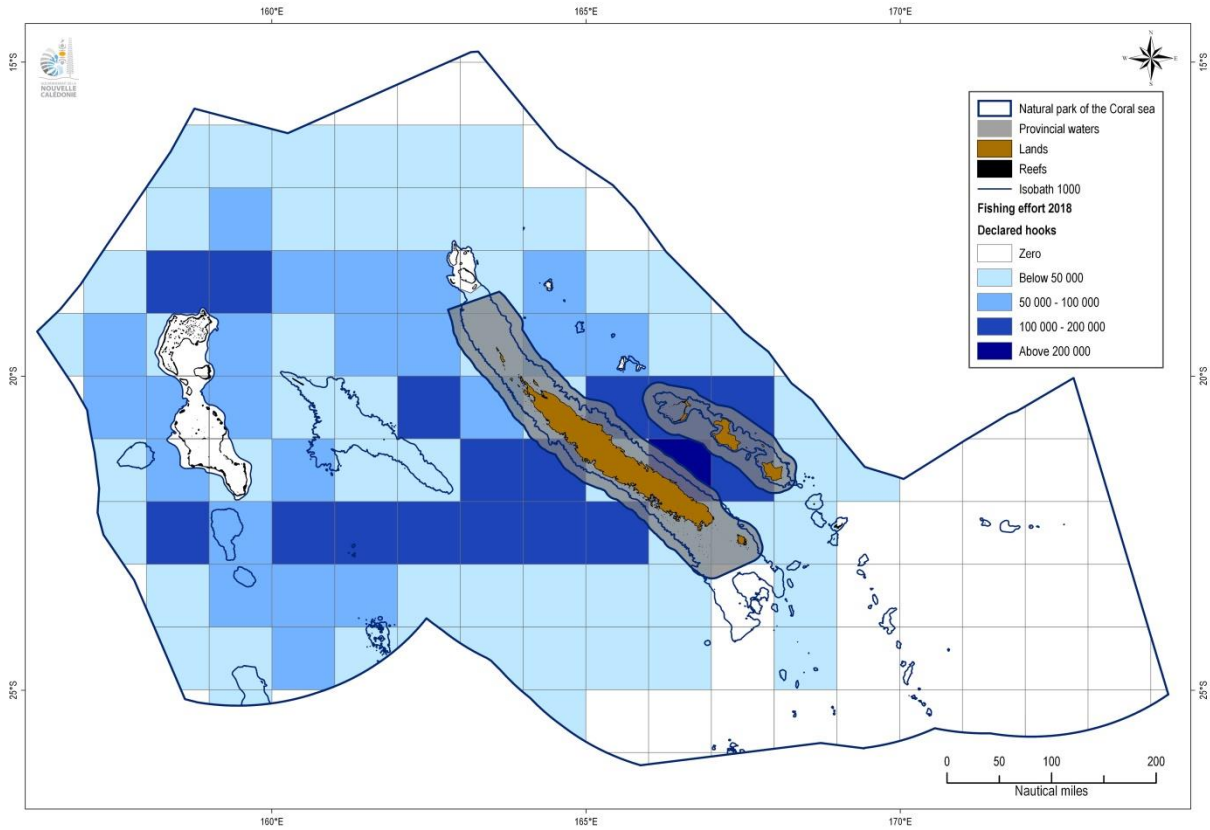
Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

b) – 2017



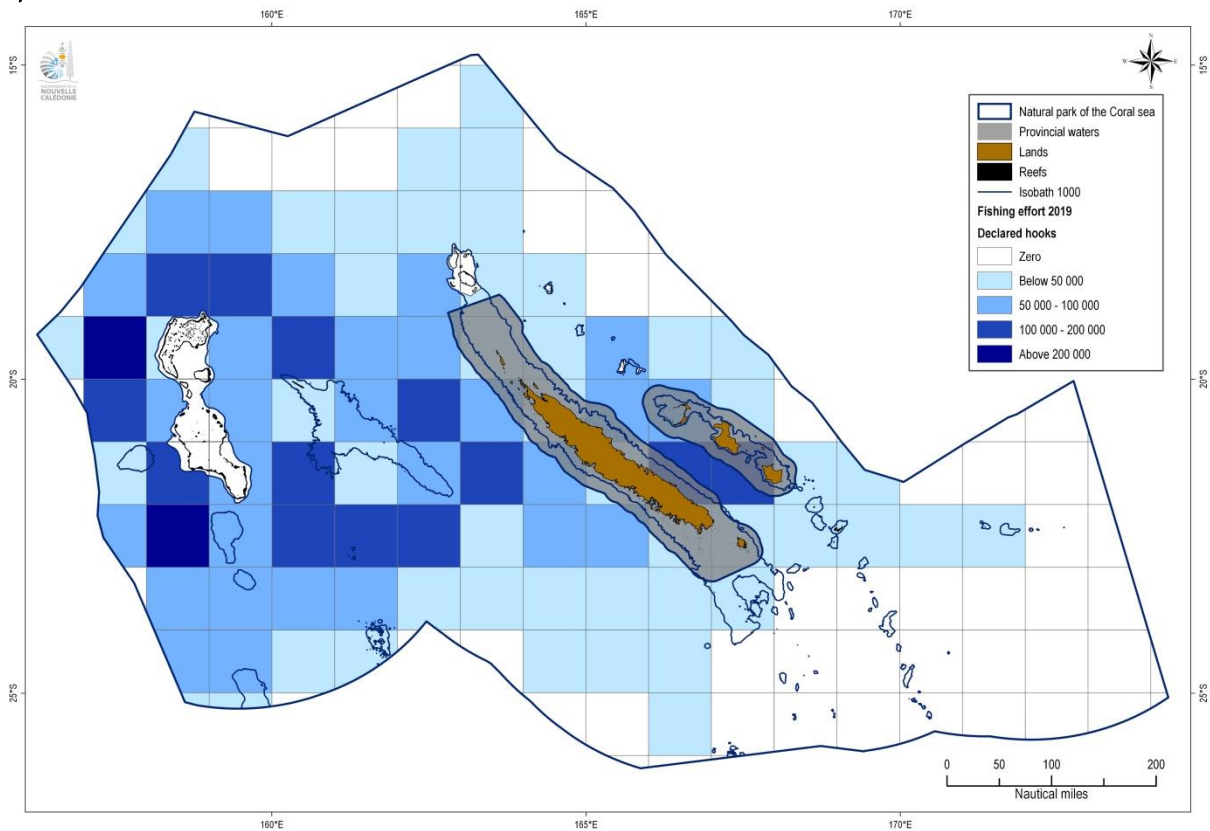
Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

c) – 2018



Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

d) – 2019



Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

e) – 2020

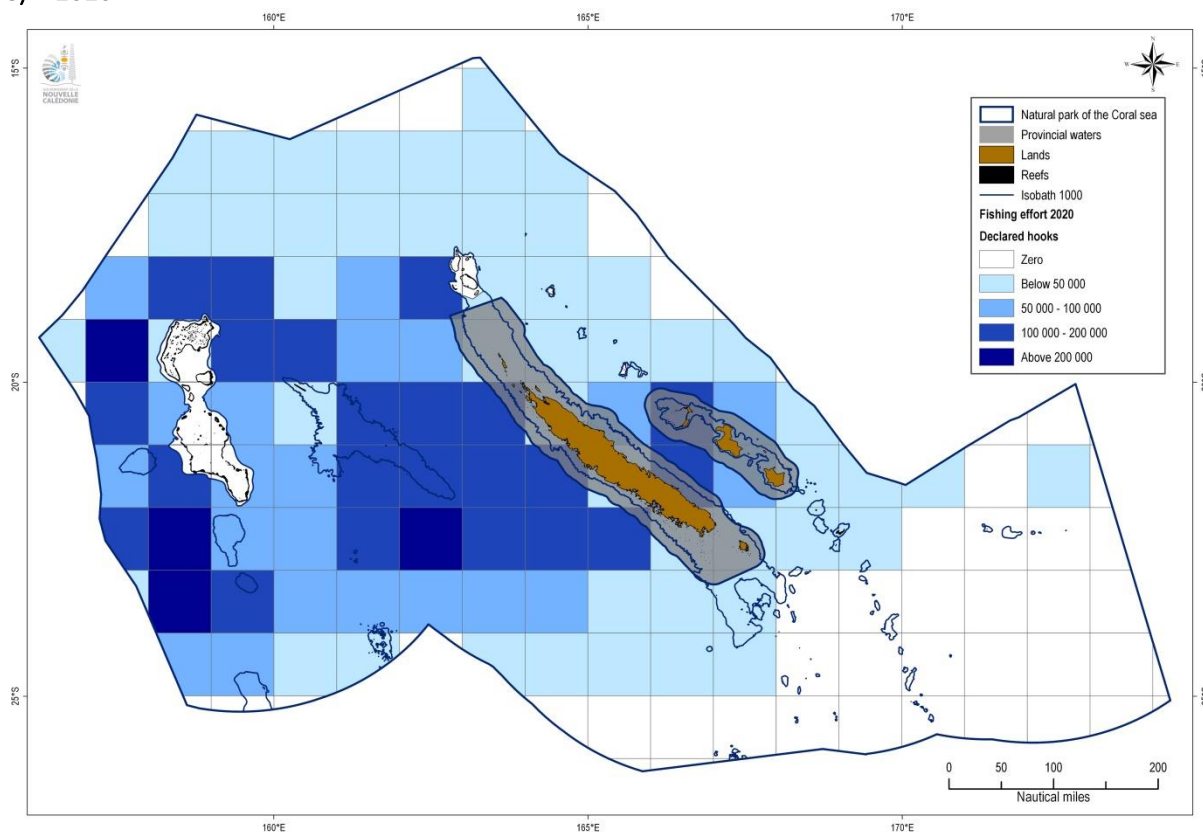


Figure 2 (a-e): Historical annual fishing effort (by hooks), of the New Caledonia longliners from 2016 to 2020. Hooks have been aggregated into 1 degree squares and the colour varies according to the number of hooks deployed

3.3. Catch statistics

In 2020, the catch level estimate of WCPFC key species is 2,658 mt. The main tuna species estimated catch is 2,604 mt (**Table 2** and **Figure 3**).

As the target species of the new caledonian fishery, the South Pacific albacore and yellowfin tunas are predominant in the catches with respectively 1,899 mt (71%) and 514 mt (19%) in 2020 (**Table 2** and **Figure 3**). The average weight of albacore is 17 kg and yellowfin tuna is 28 kg, similar to the previous year.

No new caledonian vessel targets bigeye, marlins or swordfish. Therefore, all reported catches for these species are bycatch. In 2020, 81 mt of striped marlin (south of 15° South) and 9 mt of swordfish were caught (**Table 2** and **Figure 3**). No fishing activity occurred south of 25° South in 2020.

Since the adoption of the regulation for the conservation of sharks in April 2013, which prohibits the catch, the disturbance and the retention of any sharks and rays, all the sharks caught are not boarded and must be released.

No new caledonian vessel takes part in transshipment activities in the WCPFC area.

Table 2: Historical annual fishing effort and catch estimates by species from New Caledonia longliners in the WCPFC area

Effort	2016	2017	2018	2019	2020
Days fished	2 694	2 386	2 463	2 460	2 797
Hooks	4 715 600	4 811 570	5 121 700	5 158 200	6 022 982
Catch (mt)	2 452	2 581	2 382	2 828	2 658
Albacore	1 747	1 734	1 752	1 965	1 899
Bigeye	74	48	46	37	51
Black marlin	30	65	28	29	32
Blue marlin	15	34	13	11	10
Pacific Bluefin tuna	0	1	1	1	0
Skipjack	27	41	15	11	8
Striped marlin	69	77	52	84	81
Swordfish	8	22	8	8	9
Yellowfin	482	559	467	664	514

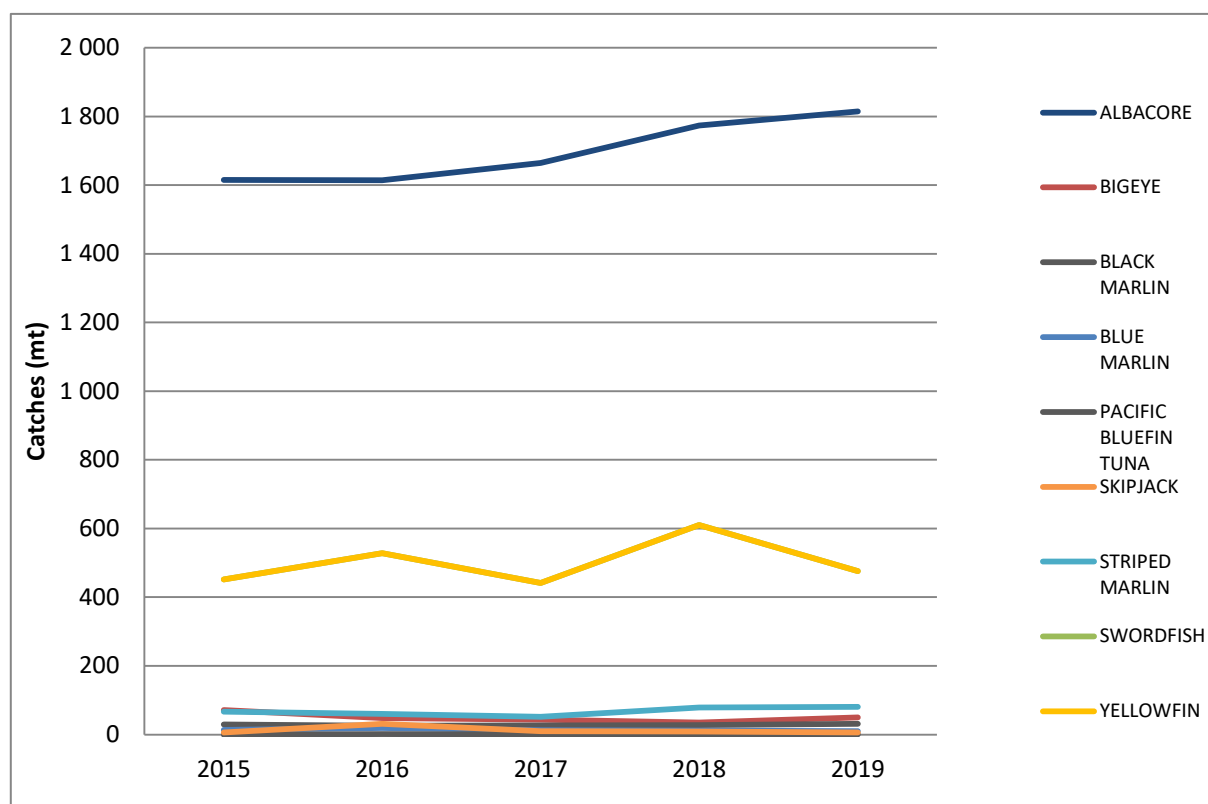


Figure 3: Historical annual catch or primary species by the New Caledonia longliners

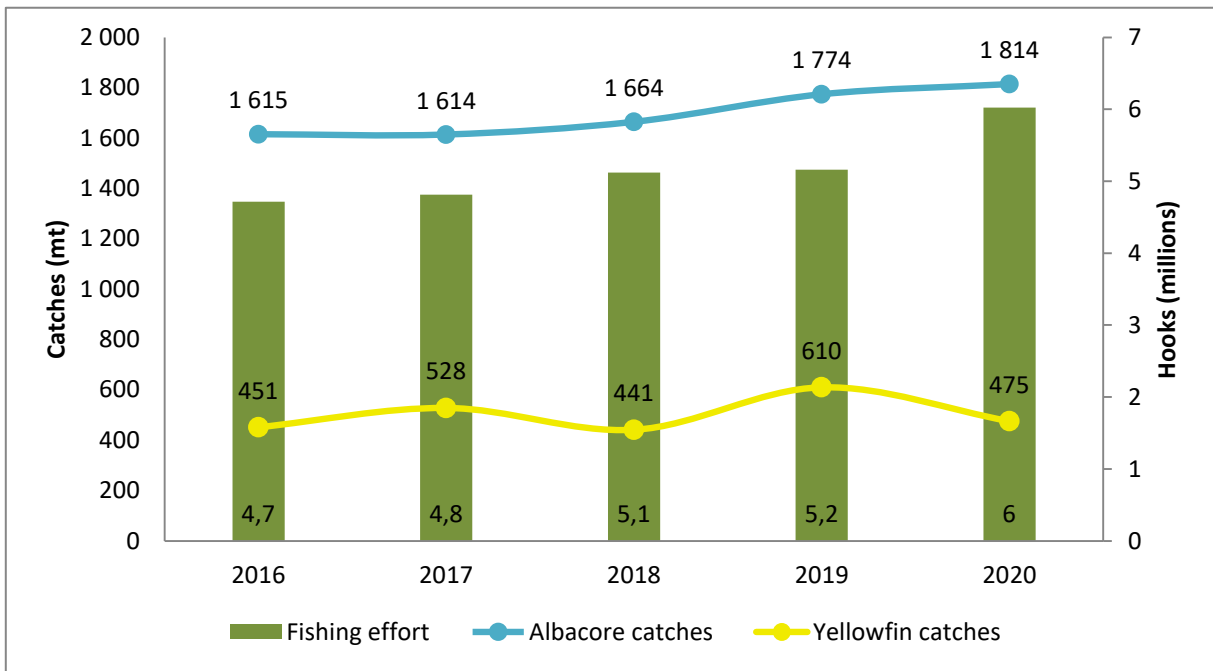
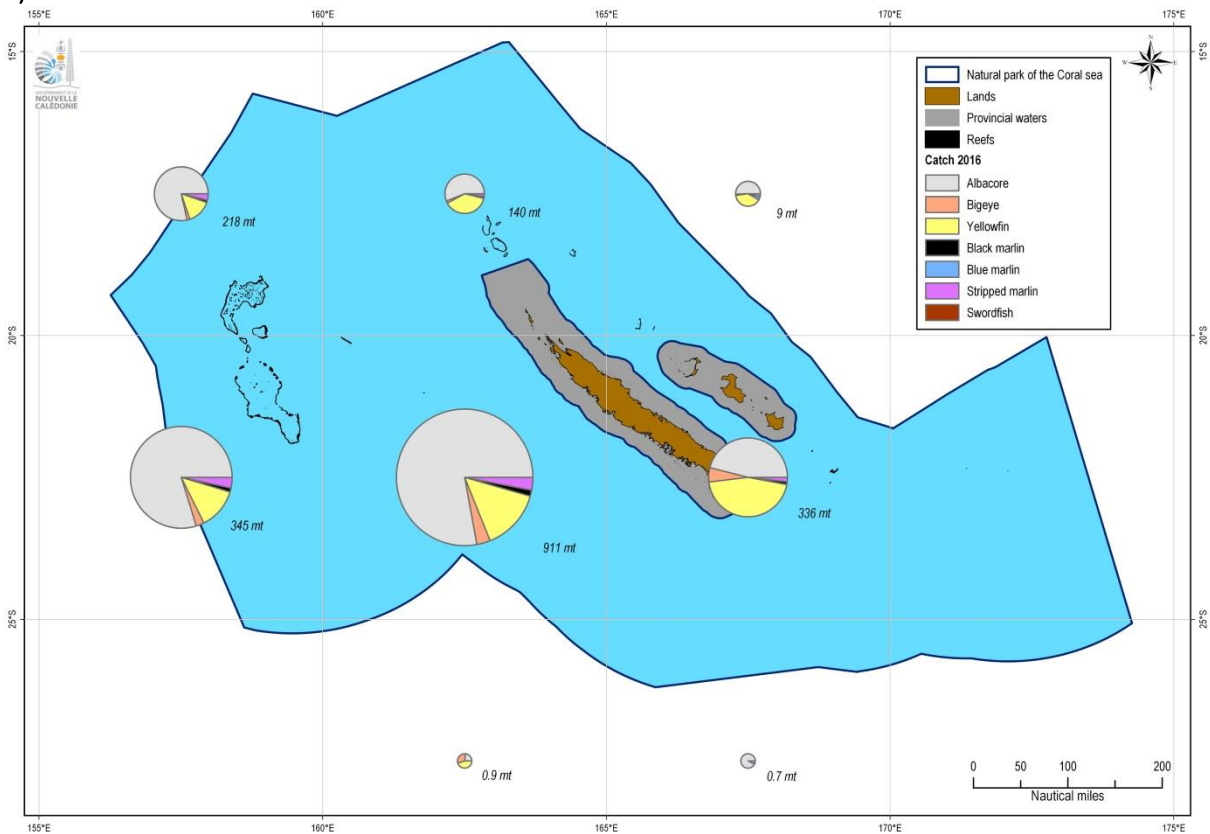


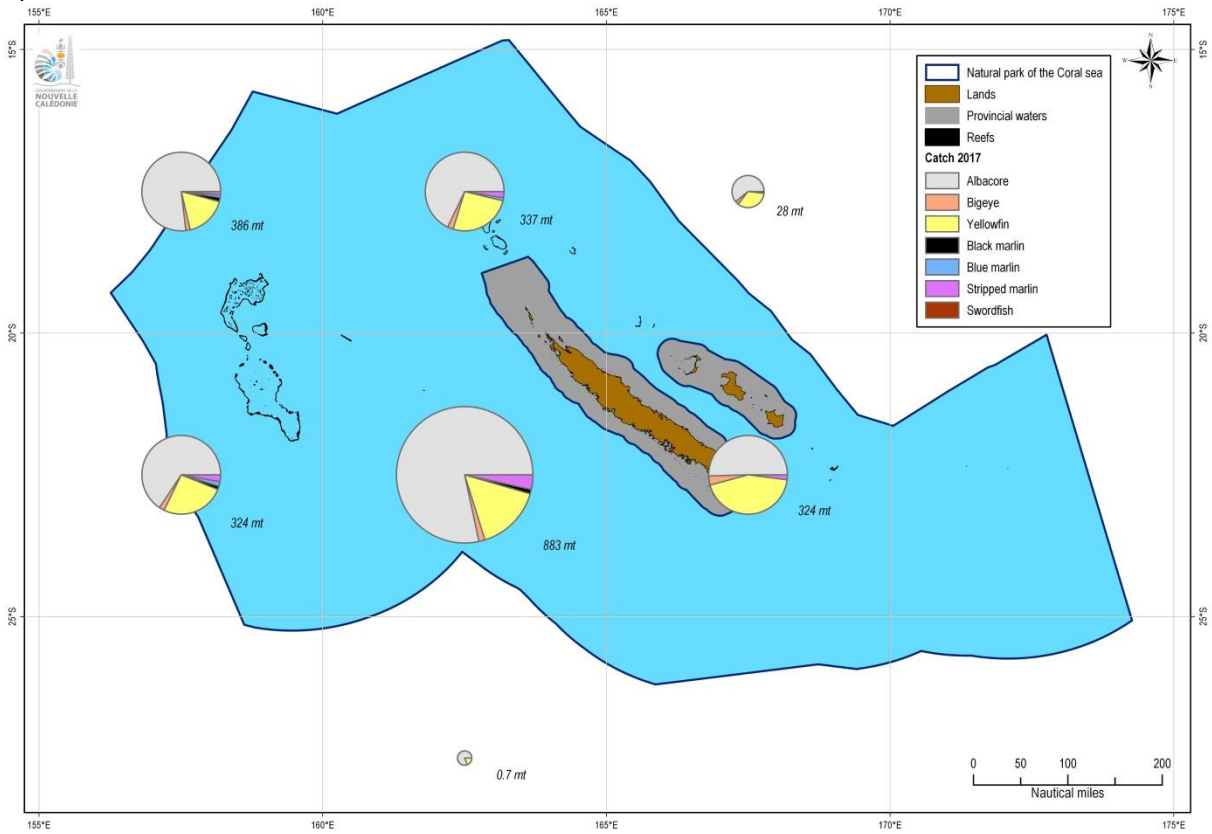
Figure 4: Annual distribution of target species catch and effort by the New Caledonia longliners

a) – 2016



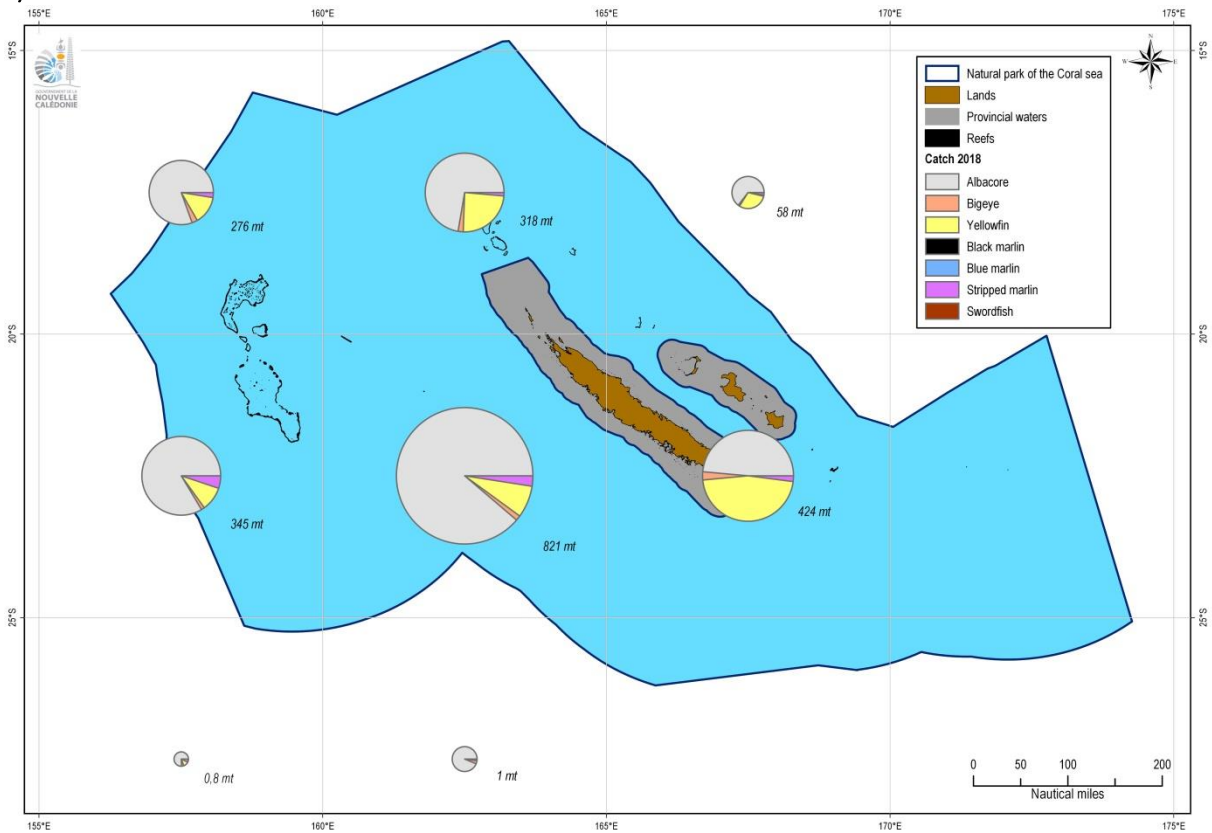
Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

b) – 2017



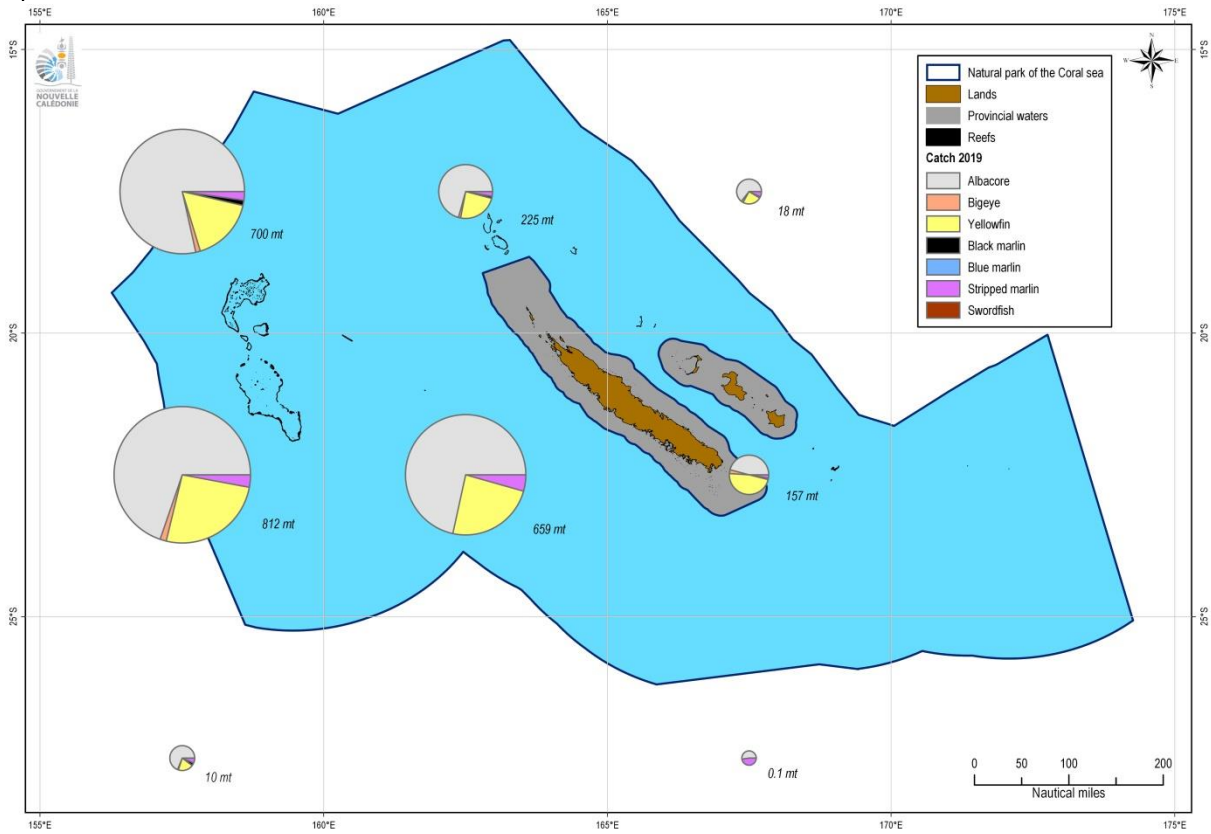
Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

c) – 2018



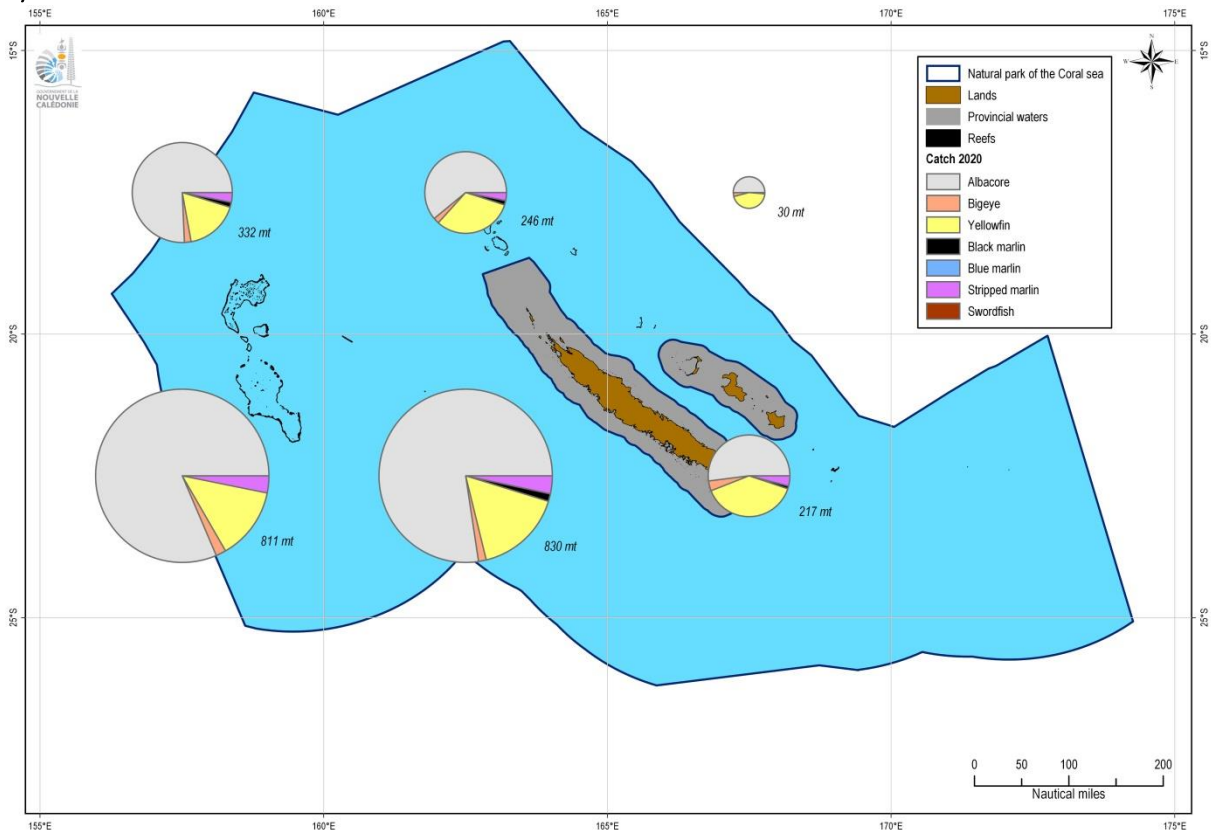
Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

d) – 2019



Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

e) – 2020



Credits: New Caledonia Government / Fisheries and natural park of the Coral sea department - April 2021

Figure 5 (a-e): Annual distributions of primary species catch by the New Caledonia longliners fleet from 2016 to 2020. The catches are aggregated by 5 degree squares and the diameter of each pie chart varies according to total tonnage of each square

3.4. Species of special interest

There is no obligation for fishermen to report any interaction with emblematic and protected species such as turtle or marine mammals on their logsheets. However, they sometimes do so for information purposes.

Interactions between seabirds, sea turtles and marine mammals are recorded by observers of the New Caledonian Observer Program (NCOB). In 2020, interactions with the fishing gear were observed with 2 seabirds and 2 sea turtles (**Table 3**). Sea turtles were released alive but seabirds were released dead.

Table 3: Observed annual catches of species of special interest

Species of special interest	Seabird	Sea turtle	Marine mammal
2016	1	5	0
2017	1	4	3
2018	9	2	1
2019	3	1	2
2020	2	2	0

Table 4: Historical effort, observed and estimated seabird captures from New Caledonia longliners

Year	Fishing effort				Observed seabird captures 23°N – 30°S	
	Number of active vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate (per thousand hooks)
2016	17	4,715,600	281,370	6.0	1	0.0036
2017	16	4,811,540	406,000	8.4	1	0.0025
2018	18	5,121,700	523,332	10.2	7	0.0134
2019	18	5,158,200	466,824	9	3	0.0064
2020	19	6,003,782	437,731	7.3	2	0.0046

Table 5: Number of observed seabirds captures in New-Caledonia longline fishery in 2020 by species and area

Species	South of 30°S	25°S-30°S	North of 23°N	23°N-25°S	Total
Petrels and Shearwaters Nei				2	2
Total				2	2

In 2020, 721 sharks of at least 16 different species were observed and 96% of them were released alive.

Table 6: Historical annual sharks catches observed by New Caledonia observers on longliners

Sharks observed (number)	2016	2017	2018	2019	2020
Bigeye thresher shark	7	4	13	9	3
Bignose shark	1	0	0	0	0
Blacktip shark	2	1	0	2	0
Blue shark	489	422	388	549	476
Bronze whaler shark	0	0	3	3	1
Bull shark	0	0	1	3	11
Great hammerhead	0	0	0	2	1
Grey reef shark	11	10	6	6	1
Longfin mako	4	10	45	24	11
Mako sharks	7	3	2	0	0
Oceanic whitetip shark	15	17	16	40	33
Pelagic thresher shark	15	8	12	14	7
Sandbar shark	1	1	6	1	2
Scalloped hammerhead	0	0	2	0	0
Shortfin mako	46	41	61	35	18
Silky shark	61	74	53	33	53
Silver-tip shark	2	1	2	0	0
Smooth hammerhead	0	1	0	1	0
Thresher shark (Vulpinus)	3	1	0	0	1
Tiger shark	13	10	10	8	6
Various sharks NEI	32	98	122	173	97

Table 7: Historical annual estimated catches of non-target, associated and dependent species by New Caledonia longliners in the WCPFC area

Catch estimates (mt)	2016	2017	2018	2019	2020
	Discarded	Discarded	Discarded	Discarded	Discarded
Blue shark	16	7	6	8	49
Silky shark	10	10	2	2	2
Hammerhead shark	0	0	1	0	0
Short finned mako shark	1	7	24	5	0
Oceanic white-tip shark	1	3	3	2	2
Porbeable shark	0	0	0	0	0
Whale shark	0	0	0	0	0
Thresher shark	0	0	1	0	1

4. Coastal state reporting

Since 2001, when last franco-japanese agreements were signed, there are no foreign vessels licensed or chartered to operate in the New Caledonia EEZ.

5. Socio-economic factors

The latest available economic data for the fishery for highly migratory species is for 2019 (to date, analyses for 2020 have not yet been conducted).

In 2019, the turnover of the fishing sector was around one billion CFP francs, similar to that of the previous year, with a slight increase in production. In 2020, the expected results are similar because the increase in the first sale price announced by fishing companies will not compensate the decrease in production observed.

6. Disposal of catch

Table 8 : Destination of New Caledonia fishery production in2019 (last economic data available)

Market	Tuna			Billfish			Other		
	Domestic	Export		Domestic	Export	Domestic	Export		
%	78%	22%		95%		5%	94%		6%
Condition	Fresh	Fresh	Frozen	Fresh	Frozen	Fresh	Fresh	Frozen	Fresh
%	100%	63%	37%	n/a ¹	n/a	100%	n/a	n/a	100%
Metric tonnes	1,772 mt	500 mt		96 mt		5 mt	141 mt		9 mt

¹ n/a : not available

7. Onshore developments

Nothing to report

8. Future prospects for the fisheries

A study is currently being conducted by the Fisheries, Aquaculture and Marine Ecosystem (FAME) department of the Pacific Community (SPC) in Noumea. This study will provide insights into whether the fishing fleet can be expanded and whether this will impact the resource. First results are expected in the 3rd quarter of 2021.

9. Status of tuna fisheries data collection systems

9.1. Logsheet data collection and verification

As a counterpart to their fishing licenses the new caledonian fishing companies must provide logsheets which are collected by the New Caledonia fisheries authority at the end of each trip. In 2020, the coverage rate of collected logsheets is 100%.

Thanks to the New Caledonia Observer Program and SPC, a PIRFO (Pacific Islands Regional Fisheries Observer) longline observer training was carried out for the first time in New Caledonia. From 20 July to 5 August 2020, 10 observers including 7 new ones completed the training. All the members are now PIRFO certified. At the end of the year, 2 new observers went on board fishing vessels to validate their knowledge and feed the Program's database.

In accordance with the provision of scientific data to the WCPFC all the logsheets data are made available to the SPC/OFP by the TUFMAN2 software. Before 2019, the data presented in this report were extracted by the DORADO system operated by SPC. Since 2019, the data presented are both extracted from the DORADO system, provided by the New Caledonia Observer Program, and from the Annual Catch Estimates document produced during the Tuna Data Workshop, carried out by SPC each year.

9.2. Observer program

In 2020, 27 fishing trips were observed by 5 observers (including 2 who were formed the same year) on-board 13 of the 19 vessels of the fleet (68%), representing 354 days at sea, 209 fishing days, 437,466 hooks and 11,075 fish observed (**Table 9**).

The observer activity covered about 7.3% of the fishing activity (in number of hooks).

Table 9: Summary of the longline observer coverage for 2020 in New Caledonia

CCM fleet	Fishery	Hooks			Days fished			Days at sea			Trips		
		Total	Obs.	%	Total	Obs.	%	Total	Obs.	%	Total	Obs.	%
New Caledonia	Domestic (longline)	6,022, 982	437,466	7.3	2,819	209	7.4	4,319	354	8.2	370	27	7.3

Table 10: Estimated annual coverage of operational catch/effort and observer data

Year	Catch/effort annual coverage (%)	Hooks observed	Hooks deployed	Rate (%)
2016	100	281,370	4,715,600	6.0
2017	100	406,000	4,811,540	8.4
2018	100	523,332	5,121,700	10.2
2019	100	460,218	5,158,200	8.9
2020	100	437,466	6,022,982	7.3

In 2020, biological samplings were collected during 7 of the 27 observed fishing campaigns. The observers collected 395 sampling from 67 fish (33 albacore, 15 yellowfin, 13 skipjack, 2 stripped marlins and 4 blue marlins). In parallel, the observer program enabled an observer and SPC officer to be taken on-board a vessel to carry out specific biological sampling for the SPC-led TIP TOP project.

9.3. Port sampling program

In 2020, the New Caledonian Observer Program did not carry out any port sampling. However, SPC carried out this type of sampling on 4.8% of caught fishes.

9.4. Unloading/Transshipment

Nothing to report

10. Research activities

- *Micronekton distribution in the southwest Pacific (New Caledonia) inferred from shipboard-ADCP backscatter data*

Based on 54 cruises spread across 19 years (1999-2017), GAMM modelling indicated that the ADCP acoustic signal of the 20-120 m averaged scattering layer was mainly driven by diel vertical migration, season, year, and ENSO (El Niño-Southern Oscillation).

A second model on night time 20–120 m backscatter showed that sea surface temperature was the main factor driving its variability in the EEZ, with intensified backscatter during the austral summer (December to May) in the northern part of the EEZ.

Acoustic density differed significantly, spatially and temporally from micronekton biomass predicted for the same period by the SEAPODYM-MTL (mid-trophic level) ecosystem model. The seasonal cycle given by ADCP data lagged behind the SEAPODYM-MTL seasonal cycle by around three months.

Receveur, A., Kestenare, E., Allain, V., Ménard, F., Cravatte, S., Lebourges-Dhaussy, A., Lehodey, P., Mangeas, M., Smith, N., Radenac, M.-H., Menkes, C., 2020a. **Micronekton distribution in the southwest Pacific (New Caledonia) inferred from shipboard-ADCP backscatter data**. *Deep Sea Research Part I: Oceanographic Research Papers* 159, 103237. <https://doi.org/10.1016/j.dsr.2020.103237>

- *Biogeography of micronekton assemblages in the Natural Park of the Coral Sea*

A total of 67 130 micronekton individuals (fish, crustaceans, and molluscs) were collected in 141 pelagic trawls, and 252 species were identified, among 152 genus and 76 families. We focused on the 22 species present in more than 25% of the total number of trawls, and studied their spatial distribution and vertical dynamic behaviour. Community structure was investigated through an innovative statistical multivariate method (Region of Common Profile, RCP), which identified 9 major assemblages, mainly driven by time of the day and sampling depth.

Environmental variables such as mean oxygen concentration, mean temperature and bathymetry, also influenced micronekton assemblages, inducing a north/south distribution pattern.

Three major day-assemblages were identified, distributed over the whole EEZ but segregated by depth: one assemblage in waters shallower than 200m and the other two in deeper waters, respectively in the north and the south. The night-assemblages were mostly segregated by depths, with two community changes at approximately 80m and 200m, and spatially with a north-south gradient. The predominant northern night assemblages were dominated by crustacean whereas the southern assemblage mostly by cephalopods and fish species.

Generally, the southwest part of the EEZ was the most diverse part.

Statistical analyses allowed to predict the spatial distribution of each species and their vertical migration behaviour was determined. Based on results, three important areas (Petrie and Astrolabe reefs and the south-western part of the EEZ) were identified to be considered for special management measures as part of the Natural Park of the Coral Sea.

Receveur, A., Vourey, E., Lebourges Dhaussy, A., Menkes, C., Menard, F., Allain, V., 2020b. Biogeography of micronekton assemblages in the Natural Park of the Coral Sea. Front. Mar. Sci. 7. <https://doi.org/10.3389/fmars.2020.00449>

- *ESSTECH cruise on pelagic ecosystem - SPC*

In preparation for the WARMALIS 2020-2021-2020 trips, a 4 days ESSTECH cruise was organised by SPC team of 6 people to develop a new trawling method for pelagic micronekton. The objective of this trip is to develop methodology for conducting oblique trawls sampling the entire water column (from 500m depth to the surface of 200m depth to the surface).

A total of 16 trawls, 9 day and 7 night at maximum depths ranging from 100m to 550m, with 6 oblique and 10 horizontal trawls were carried out.

The first results show that catch during the day was very poor with mainly gelatinous organisms and a few fish and catches at night were more diverse with fish, squids and shrimps. More, the amount of organisms caught during oblique tows seems lower than during horizontal tows.

During the WARMALIS cruises, it is planned to trawl at night when the shallow scattering layer (SSL) of micronekton is aggregated in the first 300m depth and the deep scattering layer (DSL) is down around 500-750m depth, with a gap between 300 and 500m. It would be ideal to sample the whole 800m water column to have a good idea of the biodiversity and biomass of micronekton accessible to tunas and other trop predators. For this purpose, it is recommended to conduct one oblique tow of the shallow scattering layers between 0 and 350m depth (~1:10) as well as two horizontal tows around 100m depth (~1:05) and 500m depth (~2:05) in the SSL and the DSL respectively, for a total of 4:30-5:00 hours of trawling.

Pacific Community (SPC), Fisheries, Aquaculture and Marine Ecosystem, Valérie Allain