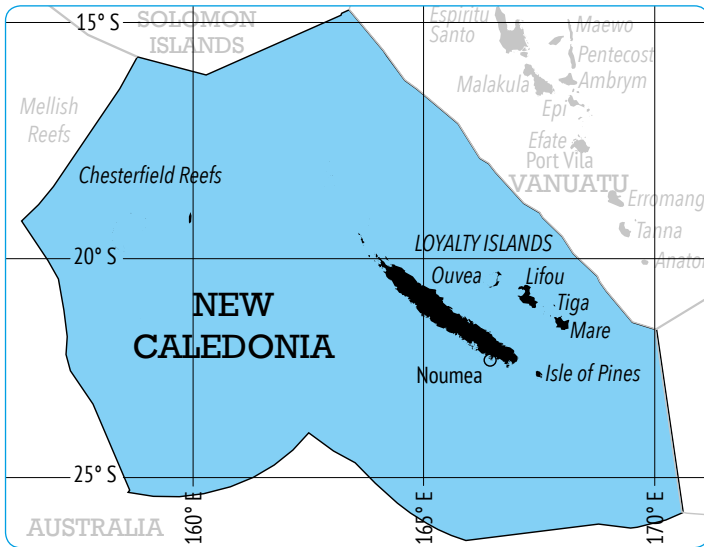


## 23 New Caledonia<sup>1</sup>



### 23.1 Volumes and Values of Fish Harvests in New Caledonia

#### Coastal Commercial Catches in New Caledonia

The following summarise historical attempts to estimate coastal fisheries production in New Caledonia:

- Dalzell et al. (1996) used the official New Caledonia catch statistics for 1992 and 1993, in estimating a coastal commercial fisheries production of 981 mt (worth US\$3,968,650) and a coastal subsistence catch of 2,500 mt (worth US\$9,000,000).
- Dupont et al. (2004) estimated annual production for 2002 and 2003: (a) lagoon and coastal commercial fishing: 1,200 mt, 238 fishing

<sup>1</sup> The French version of this chapter appears in Appendix 4, page 577 / La version française de ce chapitre se trouve en page 577 (Appendix 4).

vessels, 492 fishers; and (b) fishing for home consumption (subsistence and recreational): 3,500 mt.

- Gillett (2009) considered the Dupont et al. estimate, the declared production of New Caledonia reef/lagoon fisheries from professional fishers in 2006 and 2007, and published fish prices for 2006. The study estimated that, in 2007: (a) the coastal commercial fisheries production was 1,350 mt, worth XPF 756 million (Pacific Franc Exchange) at the point of first sale; and (b) the subsistence coastal fisheries production was 3,500 mt, worth XPF 1,372 million to fishers.

The statistics for the declared commercial production compiled by the Direction des Affaires Maritimes (DAM) appear to be reasonably accurate. Problems in estimating total coastal fisheries production occur in trying to extrapolate the declared commercial production to all commercial production, and in estimating the production of coastal subsistence and recreational fisheries. Discussions with fisheries officials and other fishery stakeholders in New Caledonia indicated that Dupont et al. (2004) – a report that synthesizes many aspects of fisheries data – is likely to remain the most informative source for the overall production from New Caledonia fisheries.

In the 10 years since the Dupont et al. (2004) study, fisheries officials at the territorial and provincial levels have not observed substantial changes in coastal fisheries production (R. Etaix-Bonnin and T. Tiburzio, per. com. August 2015). While there were some changes caused by dips in the price of nickel and spikes in the cost of fuel, these were not highly significant.

This opinion of lack of change in coastal fisheries production is supported by DAM's declared commercial production statistics, which have remained reasonably constant in the years since the Gillett (2009) study. The DAM statistics show a total reef and lagoon fishery production of 569 mt in 2008 and 544 mt in 2013 (the latest year for which published statistics are available). (DAM 2014)

However, prices have increased. DAM (2014) shows that the total value of the declared reef and lagoon fishery production increased by 21% in the period between the Gillett (2009) study and 2013.

From the above readily available information on coastal fisheries production in New Caledonia, it appears that the most appropriate approach for estimating total production is to assume no change in the volume of coastal fisheries production since the Gillett (2009) study, and a 21% increase in the value. Accordingly, in New Caledonia in 2014, it is estimated that: (a) the coastal

commercial fisheries production was 1,350 mt, worth XPF 915,000,000 at the point of first sale; and (b) the subsistence coastal fisheries production was 3,500 mt, worth XPF 1,660,000,000 to fishers.

### Coastal Subsistence Catches

For the purpose of this study, the catches from recreational fishing are considered as production for home consumption and therefore as a component of subsistence fisheries.

Following the approach in the coastal commercial section above, it is assumed that the volume of the coastal subsistence catch remains unchanged from the Gillett (2009) study, but that the value has increased by 21%.

It is estimated that, in 2014, the subsistence fisheries production in New Caledonia was 3,500 mt, worth XPF 1,660,000,000 to fishers.

### Locally Based Offshore Catches

There appears to be very good data available on the catches of New Caledonia-based offshore fishing vessels. This is because the fleet is monitored by an electronic vessel monitoring system, onboard observers, vessel logsheet information and catch offloading.

New Caledonia's annual report to the Scientific Committee of the Western and Central Pacific Fisheries Commission (Anon. 2015) states:

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. This fleet operates in the New Caledonian EEZ, and very rarely fishes in the adjacent high seas. In 2014, all of the 17 licensed domestic longliners were active. Similarly to past years there were no foreign vessels licensed or chartered to operate in the New Caledonian EEZ.

**Table 23-1:** Locally Based Offshore Catches (mt)

	2012	2013	2014
Albacore	1,751	1,732	1,630
Yellowfin	573	531	741
Bigeye	41	51	58
Marlin	154	104	123
Swordfish	10	9	14
Mako shark	10	2	0
Others	260	261	310
<b>Total</b>	<b>2,796</b>	<b>2,691</b>	<b>2,876</b>

Source : DAM (2014) and Anon. (2015)

As to the value of the catch, the annual offshore fishing report by Direction des Affaires Maritimes (DAM 2014) states that the value at first sale of the offshore catch in 2013 was XPF 1,135 million (XPF 420 per kg). As at December 2015 the annual report for 2014 was not available. However, information in ISEE (2015) indicates that the export value of the 2014 offshore catch had increased by 16% from 2013. Accordingly, for the purpose of the present study it will be assumed that the total catch value had also increased by 16%.

It is estimated that the 2014 catch by the locally based offshore fleet was 2,876 mt, worth XPF 1,316,600,000.

### Foreign-Based Offshore Catches

In the paper presented by New Caledonia to the 4th Scientific Committee Meeting of the Western and Central Pacific Fisheries Commission (Anon. 2008) it is stated that no licences to fish have been issued to foreign vessels since early 2001. The absence of authorised foreign fishing in the New Caledonia zone in recent years is confirmed by New Caledonia's paper to the 11th Scientific Committee, in August 2015 (Anon. 2015).

### Freshwater Catches

Little information is available on freshwater fishing in New Caledonia. An official of Direction des Affaires Maritimes indicated that all such catches are for subsistence purposes, and consist mainly of eels, *Macrobrachium* and some small species of finfish (R. Etaix-Bonnin, per. com. August 2008). A fisheries official of Province Sud indicated that there are catches of black bass from the lake in Yate (T. Tiburzio, per. com. August 2015).

A crude estimate of the annual harvest would be about 10 mt. Valuing this production similarly as with the production of coastal subsistence fisheries production, above, the 10 mt would be worth XPF 4,743,000.

## Aquaculture Production

Aquaculture in New Caledonia is dominated by shrimp farming. There is also the culture of much smaller amounts of gigas oysters and freshwater crayfish. There are reports of experimental culture of rabbitfish and beche-de-mer.

Shrimp culture began in New Caledonia in the early 1980. Production increased until 2006, then declined until 2010, and has recovered somewhat since. About 60% of the production is exported, with three-quarters of exports for the Japanese market.

- The annual report of commercial fishing and aquaculture (DAM 2014) states that, in 2013, there were 18 shrimp farms, 94 ponds and 670 hectares in production. The harvest was 1,570 mt, with an average price at first sale of XPF 1,050 per kg (XPF 1,648,500,000 in total value).
- As of December 2015 the annual report had not been published. However, information in ISEE (2015) indicates that the 2014 shrimp harvest was 1,670 mt. Using the 2013 prices at first sale, the value of the 2014 shrimp harvest is estimated to be about XPF 1,753,500,000.

The annual production of freshwater crayfish is between 3 to 4 mt, and for gigas oysters between 40 and 80 mt (DAM unpublished data). The price at first sale for both commodities in 2014 is estimated to be XPF 90 million.

The total aquaculture production for New Caledonia in 2014 is estimated to be 1,733 mt, with a value at first sale of XPF 1,843,500,000.

## Summary of Harvests

An approximation of the annual volumes and values at point of first sale of the fisheries and aquaculture harvest in New Caledonia in 2014 is given in Table 23-2.

**Table 23-2:** Annual Fisheries and Aquaculture Harvest in New Caledonia, 2014

Harvest Sector	Volume (mt)	Value (XPF)
Coastal Commercial	1,350	915,000,000
Coastal Subsistence	3,500	1,660,000,000
Offshore Locally based	2,876	1,316,600,000
Offshore Foreign-based	0	0
Freshwater	10	4,743,000
Aquaculture	1,733	1,843,500,000
<b>Total</b>	<b>9,469</b>	<b>5,739,843,000</b>

The poor factual basis for the production estimates from coastal commercial and coastal subsistence is acknowledged.

Figures 23-1 and 23-2 show the volumes and values of the 2014 New Caledonia fisheries production.

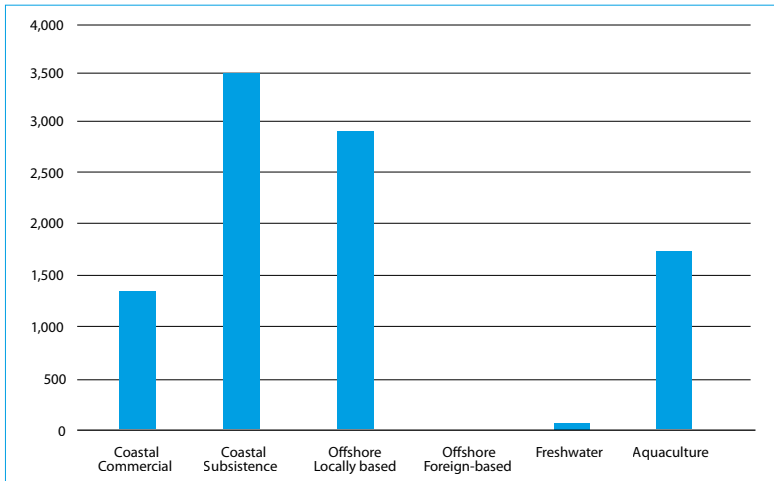


Figure 23-1: New Caledonia Fisheries Production 2014 by Volume (mt)

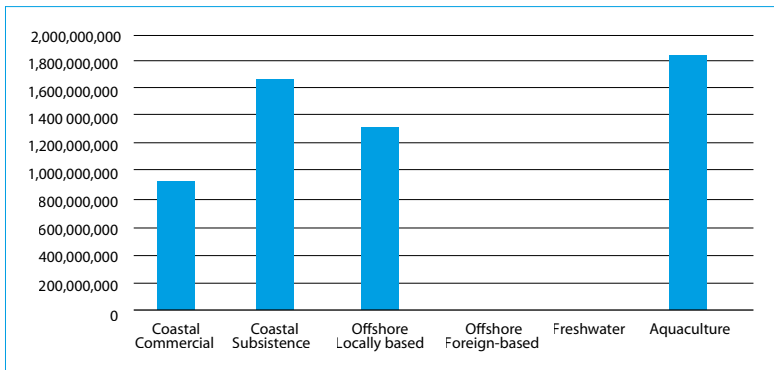


Figure 23-2: New Caledonia Fisheries Production 2014 by Value (XPF)

## Past Estimates of Fishery Production Levels by the Benefish Studies

Similar studies of the benefits to Pacific Island countries and territories from fisheries (“Benefish” studies) have been carried out in the past. Gillett and Lightfoot (2001) focused on the year 1999, Gillett (2009) focused on 2007 and the present study focuses on 2014. The estimated fishery production levels for New Caledonia from those studies are presented in Table 23-3.<sup>2</sup>

<sup>2</sup> The earliest Benefish Study, Gillett and Lightfoot (2001), did not include aquaculture, freshwater fisheries or the non-independent territories.

Table 23-3: Estimates by the Benefish Studies of Annual Fisheries/Aquaculture Harvests

Type de pêche	Estimate Year	Volume (mt)	Nominal Value (XPF)
Coastal Commercial	1999	n/a	n/a
	2007	1,350	756,000,000
	2014	1,350	915,000,000
Coastal Subsistence	1999	s/o	s/o
	2007	3,500	1,372,000,000
	2014	3,500	1,660,000,000
Offshore Locally based	1999	n/a	n/a
	2007	2,122	745,000,000
	2014	2,876	1 316 600 000
Offshore Foreign-based	1999	n/a	n/a
	2007	0	0
	2014	0	0
Freshwater	1999	n/a	n/a
	2007	10	3,992,000
	2014	10	4,743,000
Aquaculture	1999	n/a	n/a
	2007	1,931	1,443,700,000
	2014	1,733	1,843,500,000

Source: The present study, Gillett (2009), Gillett and Lightfoot (2001)

The apparent changes in production between years sometimes represents a real change in production, but it can also reflect a change in the methodology for how the production is measured (hopefully an improvement). In the table above, the volumes of production for coastal commercial, coastal subsistence, and freshwater do not change between the years because there are no new production data and no anecdotal information suggesting changes. In contrast, changes in production figures in the table for the offshore fisheries and aquaculture (based on the availability of better quality data) reflect real changes in the amounts being harvested.

## 23.2 Contribution of Fishing to GDP

### Current Official Contribution

2010 is the latest year for which an official and detailed GDP estimate has been made for New Caledonia. Although some provisional estimates have been made up to 2013, the detailed contributions by economic sectors are not yet publicly available.

Staff of the Institut de la Statistique et des Etudes Economique provided unpublished data that show the contribution of fishing and aquaculture to the 2010 New Caledonia current price GDP (Table 23-4).

Table 23-4: Fishing and Aquaculture Contribution to GDP, 2010 (XPF millions)

	Value of production	Value added
Fishing	4,155	1,236
Aquaculture	1,738	127
Total fishing and aquaculture	5,893	1,363

Source: ISEE (unpublished data)

With a GDP of XPF 842,913 million in 2010 (ISEE 2014), the fishing and aquaculture contribution represents about 0.16% of GDP.

### Method Used to Calculate the Official Fishing Contribution to GDP

Discussions with ISEE staff and subsequent correspondence produced some insight on the methodology for calculating the fishing and aquaculture contribution to GDP (L. Bertoux, per. com. October 2015). The following summarise some aspects of the methodology:

- For aquaculture, the production and intermediate consumption come from the tax declarations of the companies involved.
- For professional fishing the data comes from the Direction des Affaires Maritimes.
- Non-professional fishing is assumed to be about 3,500 mt per annum – a figure that comes from a 1998 household income and expenditure survey.



An examination of the table above shows value added ratios of fishing (VAR of .30) and aquaculture (VAR of .07). These ratios appear low. Because ISEE has access to aquaculture company accounts, it is assumed that the low VARs are accurate. The low VAR for the fishing category in the table may be unrealistic in view of the fact that the largest component of the fishing category is subsistence fishing, with a characteristically high VAR. The present study uses a VAR of .80 to .90 for marine subsistence fishing. Some work on VARs specifically for New Caledonia has been carried out by Dupont et al. (2004) and appears in Table 23-5.

**Table 23-5:** Value Added Ratios for Some Types of Fishing in New Caledonia

Activity/Location	VAR
Small boat fishing in New Caledonia; outboard vessels 3.4 to 4.5 m in length	0.65
Small boat fishing in New Caledonia; outboard vessels 5.5 to 7 m in length	0.80
Small boat fishing in New Caledonia; inboard vessels 7 to 8 m in length	0.65
Small boat fishing in New Caledonia; inboard vessels 8.4 to 11.96 m in length	0.60

Source: Dupont et al. (2004)

### Alternative Estimate of Fishing Contribution to GDP

Table 23-6, below, represents an alternative to the official method of estimating fishing contribution to GDP in New Caledonia. It is a simplistic production approach that takes the values of five types of fishing/aquaculture activities for which production values were determined in Section 23.1, above (summarised in Table 23-2), and determines the value added by using value added (VARs) that are ratios characteristic of the type of fishing concerned. Those VARs were determined through knowledge of the fisheries sector, and by using specialised studies (Appendix 3).

**Table 23-6:** Fishing Contribution to GDP in 2014 Using an Alternative Approach

Harvest Sector	Gross Value of Production (XPF, from Table 23-2)	VAR	Value Added (XPF)
Coastal Commercial	915,000,000	0.65	594,750,000
Coastal Subsistence	1,660,000,000	0.80	1,328,000,000
Offshore Locally based	1,316,600,000	0.20	263,320,000
Freshwater	4,743,000	0.90	4,268,700
Aquaculture	1,843,500,000	0.45	829,575,000
<b>Total (CFP)</b>	<b>5,739,843,000</b>	<b>---</b>	<b>3,019,913,700</b>

Source: Table 23-2, and consultant's estimate

It is not intended that the approach in Table 23-6 replace the official methodology, but rather that the results obtained serve as a comparator to gain additional information about the appropriateness and accuracy of the official methodology, and to indicate any need for its modification.

New Caledonia's GDP was XPF 886 billion in 2013 (ISEE 2014). It is clearly not methodologically appropriate to compare the value added from fishing and aquaculture in 2014 to the GDP in 2013, but solely for illustrative purposes, fishing and aquaculture for 2014 represents 0.34% of the GDP of the previous year. This is about twice the official contribution of fishing/aquaculture to GDP in 2010. Most of this difference arises from the relatively low value added ratios used in the official calculations.

### 23.3 Exports of Fishery Production

The Institut de la Statistique et des Etudes Economique tracks New Caledonian exports, including fishery exports. This data is illustrated by value in Table 23-7, and by volume in Table 23-8.

**Table 23-7:** Value of Fishery Product Exports (XPF millions)

	2010	2011	2012	2013	2014
All fishery products	1,806	1,832	1,942	2,053	2,173
Tuna	431	437	413	265	253
Shrimp	1,025	1,013	1,145	1,302	1,435
Beche-de-mer	181	287	260	342	389
Trochus shells	104	68	86	106	61
Other	65	27	38	38	35
Total New Caledonia exports	134,530	143,904	123,039	110,189	144,309

Source : ISEE (2015)

**Table 23-8:** Volume of Fishery Product Exports (mt)

	2010	2011	2012	2013	2014
All fishery products	2,131	1,749	1,834	1,943	1,793
Tuna	1,095	844	779	775	636
Shrimp	746	708	817	868	958
Beche-de-mer	26	34	31	42	52
Trochus shells	228	144	175	227	127
Other	36	19	32	31	20

Source: ISEE (2015)

It can be seen from the above tables that shrimp is by far the most important fishery export of the country, and that the exports of that commodity have increased during the five-year period. The second-most important fishery export is beche-de-mer, but exports of that commodity have decreased during the five-year period.

Unlike other Pacific Island countries or territories that have locally based longliners, the majority of the tuna catch in New Caledonia is not exported but is consumed domestically. In 2014 only about one-quarter of the tuna catch was exported. About 57% of cultured shrimp was exported.

## 23.4 Government Revenue from Fisheries

### Access Fees for Foreign Fishing

No licences to fish have been issued to foreign vessels since early 2001 (Anon. 2008) and, consequently, no fees have been paid for fishery access.

### Other Government Revenue from Fisheries

In general, in New Caledonia the fisheries sector is not revenue generating, but rather is subsidy absorbing, as a variety of subsidies are available for the various fisheries sub-sectors.

## 23.5 Fisheries-Related Employment

In New Caledonia there is good information available on employment on locally based offshore fishing vessels and associated shore-based activities. There is also data on registered commercial fishers and aquaculture workers, but there is much less information on non-registered commercial fishers and participants in subsistence fishing activities.

ISSS (2015) summarises the information on registered commercial fishers (Table 23-9).

Table 23-9: Numbers of Registered Commercial Fishers<sup>3</sup>

	2000	2005	2010
<b>Coastal and lagoon fishing</b>	<b>694</b>	<b>412</b>	<b>613</b>
Province Sud	348	172	92
Province Nord	286	149	480
Province Îles Loyauté	60	91	41
<b>Offshore fishing</b>	<b>99</b>	<b>162</b>	<b>120</b>
Province Sud	99	102	93
Province Nord	0	60	27
<b>Total coastal/lagoon/offshore</b>	<b>793</b>	<b>574</b>	<b>733</b>

Source : ISEE (2015)

<sup>3</sup> An individual familiar with New Caledonia fisheries estimated that the number of non-registered commercial fishers is approximately equivalent to those that are registered (B. Fao, per. com. August 2008).

DAM (2011) examines offshore fisheries-related employment more closely, and converts the number of jobs to full-time equivalents. This is shown Table 23-10. Although data expressed as FTEs is important in making comparison between years and countries, few (if any) other countries or territories in the present study express fisheries-related employment in this manner.

Table 23-10: Offshore Employment in 2010

		Number of jobs	Full time equivalent
AT SEA	Captains	10	9.5
	Chief engineers	14	12.1
	Engineers	6	6.0
	Deck crew	94	80.3
	<b>Total</b>	<b>124</b>	<b>108.7</b>
ASHORE	Fleet manager	7	6.4
	Assistant fleet manager	4	3.3
	Secretary	4	2.6
	Accountant	5	2.4
	Chief technician	1	1.0
	Maintenance technicians	9	9.0
	Unloading crew	3	3.0
	Maintenance workers	1	0.5

Units are number of occupied jobs  
Source: DAM (2011)

A newer study updates the offshore employment information and provides more detail (DAM 2014). This study estimates that, in 2013, there were 120 onboard crew, 30 people in onshore vessel management, 60 people in processing, and 20 people in fish wholesaling; representing 230 people.

Unpublished ISEE data is available on employment, using payroll data (Table 23-11). It is assumed that these data give the number of formally employed fisheries wage earners. This data includes aquaculture employment.

Table 23-11: Number of Fisheries Jobs, from Payroll Data

	2010	2011	2012	2013	2014
Marine fishing	228	249	245	238	228
Freshwater fishing	0	0	0	0	0
Marine aquaculture	154	169	170	190	199
Freshwater aquaculture	0	0	0	0	0
<b>Total</b>	<b>382</b>	<b>417</b>	<b>415</b>	<b>428</b>	<b>426</b>

Source: ISEE (unpublished data)

The ISEE website<sup>4</sup> indicates that there were 91,440 salaried employees in New Caledonia in 2014. The 426 people employed in fisheries, shown in the table above, represent 0.47% of salaried employees in New Caledonia.

Some information is available on the age structure of fishers, as follows:

- A study in Province Sud of 82 fishing captains revealed that, in 2013, the average age of captains was 52 years, about 30% were aged over 60, and 43% were aged under 50 (Province Sud 2014).
- A study in 2013 stated that, despite the relatively young population of New Caledonia, fishers are getting older, which could be an indication of the non-attractiveness of the sector. The average age of a fisher in the Province Nord was 53.5 years, and in the Province Sud was 50 years. (CNPMM 2013).

There appears to be less information available on non-commercial fishing in New Caledonia. Virly (2000) gives the results of a study of subsistence fishing in New Caledonia. The survey involved administering a questionnaire to 1,000 people in the three provinces of New Caledonia. The results showed that half of the respondents fished one to three times per week.

The SPC ProcFish programme surveyed five sites in New Caledonia (Kronen et al. 2009). Table 23-12 is an extract from the report of the survey, showing the importance of both reef fisheries and the sale of fish. These sites were not intended to be representative of all sites in the country, but rather representative of sites having active reef fisheries.

Table 23 -12: Involvement with Fisheries at SPC ProcFish Sites

Site	Households involved in reef fisheries	Households with fisheries as most important source of income
Ouassé	100%	0%
Thio	97.6%	47.6%
Luengoni	90.0%	6.7%
Oundjo	100%	50.0%
Moindou	90.0%	12.5%
Average across the five sites	94.6%	27.0%

Source : Kronen et al. (2009)

<sup>4</sup> <http://www.isee.nc/economie-entreprises/entreprises-secteurs-d-activites/agriculture-peche-aquaculture> [accessed 8 April 2016]

SPC (2013) uses ProcFish data to examine the ratio of men to women fishers across the Pacific. For the New Caledonia sites examined, about 65% of fishers were men and 35% were women.

## 23.6 Levels of Fishery Resource Consumption

Dupont et al. (2004) indicate that, in 2003, 4,632 mt of fish and crustaceans, from both domestic fisheries and imports, were consumed by households in New Caledonia. The annual per capita consumption of fish and crustaceans was considered to be 21.6 kg.

A representative of Direction des Affaires Maritimes was not aware of any more recent studies on fish consumption specifically focused on New Caledonia (R. Etaix-Bonnin, per. com. August 2015).

Bell et al. (2009) use information from household income and expenditure surveys conducted between 2001 and 2006 to estimate patterns of fish consumption in the Pacific Island region. The HIES were designed to enumerate consumption based on both subsistence and cash acquisitions. For all of New Caledonia the annual per capita fish consumption (whole weight equivalent) was 25.6 kg. For rural areas the figure for per capita consumption of fish was 54.8 kg, and for urban areas it was 10.7 kg.

The SPC ProcFish programme carried out survey work at five sites in New Caledonia (Kronen et al. 2009). That work included estimates of per capita fish consumption (Table 23-13). The sites were not intended to be representative of all sites in the territory, but rather to be representative of sites having active reef fisheries. Compared to other ProcFish sites across the Pacific, the nominal per capita invertebrate consumption was relatively high, and was very high relative to the fresh fish consumption at the New Caledonia sites.

**Table 23-13:** Fishery Product Consumption at ProcFish Sites (kg/person/year)

Site	Fresh fish consumption	Invertebrate consumption	Canned fish consumption
Ouassé	20.74	14.25	5.36
Thio	21.57	34.99	4.68
Luengoni	36.21	5.25	18.05
Oundjo	34.39	46.12	5.82
Moindou	32.95	23.47	1.17
Average across the five sites	29.81	26.46	6.69

Source : Kronen et al. (2009)

A relatively new source of fish for domestic consumption has become available. Longlining started in Noumea in the early 1980s, but in the mid-1990s the fleet was reduced to just two vessels (DAM 2013). In 2014 that fleet (by then 17 vessels) captured 2,876 mt of tuna and other pelagic fish (Anon. 2015), with only 253 mt of that amount being exported (ISEE 2015). The 2,624 mt of non-exported fish in 2014 represented about 26.2 kg for each of the 100,000 residents of Noumea.<sup>5</sup>

## 23.7 Exchange Rates

The average yearly exchange rates (XPF to the US dollar) used in this book are as follows:

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
96	96	95	87	80.0	83.22	90.27	92.16	89.88	86.01	98.13

<sup>5</sup> A Noumea-based fisheries specialist indicated that albacore is one of the basic foods “sponsored” by the government to mitigate the “expensive life” (“La vie chère”). This was indicated as the main reason why there is a high consumption of albacore by Noumea residents: approximately XPF 1200/ kg for albacore fillets at the time of the communication, which was about half the price of beefsteak (A. Desurmont, per. com. January 2016).