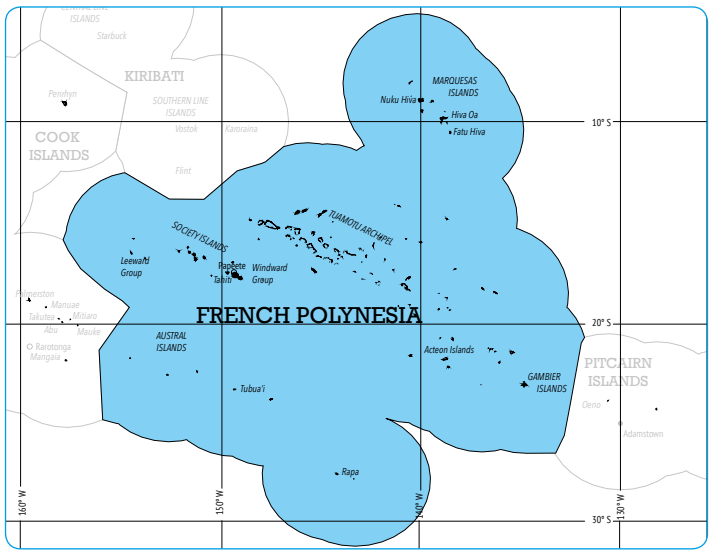
21 French Polynesia[1]



21.1 Volumes and Values of Fish Harvests in French Polynesia

Coastal Commercial Catches in French Polynesia

Dalzell et al. (1996) estimated a coastal commercial fisheries production of 2,352 mt (worth US$14,371,469) and a coastal subsistence catch of 3,691 mt (worth US$14,468,720).

As the fishery production in French Polynesia is reasonably well documented in the Statistical Bulletin of the of the government fisheries agency, Direction des Ressources Marines et Minières (DRMM), Gillett (2009) used the available data and modified them to fit the different categories of the 2009 study. It was estimated that the coastal commercial fishery production of French Polynesia in 2007 was 4,002 mt (worth XPF [Pacific Franc Exchange]

1 The French version of this chapter appears in Appendix 5, page 595 / *La version française de ce chapitre se trouve page 595 (Appendix 5).*

2 billion to fishers) and the coastal subsistence production was 2,880 mt (worth XPF 1.15 billion to fishers).

The nature of coastal fisheries data available to the present study is similar as was available to the 2009 study Gillett (2009), so, accordingly, a similar approach will be followed here to estimate coastal fisheries production.

DRMM groups the fisheries of French Polynesia into three categories: lagoon, coastal and offshore. The "coastal fisheries"[2] in that categorisation scheme does not correspond to the "coastal fisheries" of the present study – DRMM's use relates to fishing in the open ocean using relatively small vessels. The lagoon and coastal DRMM categories together correspond with the combined coastal commercial and coastal subsistence categories used in the present study.

The DRMM Statistical Bulletin (DRMM 2015) states that, despite the lack of good statistics on lagoon fishery production, it is possible to estimate the 2014 production from lagoon fisheries in the territory as 4,300 mt, which comprises 3,400 mt of lagoon fish, 700 mt of small pelagics, and 200 mt of other products (molluscs, crustaceans, echinoderms, etc.). The total value to fishers is estimated to be XPF 2 billion.

The above came from the 2014 DRMM annual statistics report, but identical statements have appeared in DRMM reports back to at least 2007. The production numbers apparently come from the selective use of several studies covering various geographical areas of French Polynesia.

Staff of DRMM expressed the opinion that lagoon fishery production has not changed significantly over the past decade. They cite various factors that could conceivably have affected production and indicate that the effects are not significant:

- The catch of pelagic fish by longline vessels has a large impact on coastal fisheries production. As longline production increases the demand for reef/lagoon fish decreases.
- It is becoming easier to move fish by air from the Tuamotu Archipelago (where much of the coastal fishing activity occurs) to Tahiti (where most of the coastal fisheries consumption occurs).
- Increases or decreases in pearl production (mostly in the Tuamotu Group) affect the level of coastal fisheries production because there are limited employment alternatives in that area. Pearl farming was at

2 "Pêche côtière" in the DRMM Statistical Bulletin.

maximum production levels in 2000, with the present level being about half of the 2000 level. Increases in coastal fisheries production due to fishing activities of former pearl farmers is tempered somewhat by the fully or over-exploited conditions of some islands.

- Because traditional fish traps ("parc à poissons") are responsible for about half of all coastal fisheries production, a change in the number of traps could have a large effect on production. The number of such traps has increased only slightly in the Tuamotu and Leeward Society Islands. Although a huge swell around 2010 or 2011 destroyed many traps in French Polynesia, the negative effect on production is thought to have been relatively minor, as the larger producers quickly repaired their traps; although marginal producers were affected to a greater extent, as they were not able to repair their traps as quickly.
- A dedicated fish collection vessel operated from 2013 to 2015. The production changes caused by this vessel operating, and then ceasing to operate, are thought to be small, as the vessel did not contribute greatly to production while it was operating.

The various factors above contribute both positively and negatively to fish production. The net result, corroborated by the general consensus of knowledgeable fishery stakeholders, is that coastal fisheries production has remained relatively stable over the last 10 years. Accordingly, the present study assumes that annual production from lagoon fisheries in the territory remains at the often-cited level of 4,300 mt. One change that is recognised by senior DRMM staff is that the proportion of lagoon fishery production that is sold has increased, and is now approximately equal to subsistence catches (A. Stein and C. Ponsonnet, per. com. September 2015). It is therefore estimated that the 4,300 mt catch from lagoon fisheries can be divided into 2,150 mt commercial and 2,150 mt non-commercial.

By using the farm gate system of valuing subsistence production (applying a 30% discount), values and volumes can be assigned to the commercial and non-commercial components of the 2014 lagoon fishery catch. Although the stated value of the lagoon catch in DRMM reports (XPF 2 billion) has remained constant since 2007, it is more realistic to assume at least some value increase during the decade. Accordingly, the 2,150 mt commercial lagoon catch in 2014 is estimated to be worth XPF 1,470,588,235 to fishers, and the 2,150 mt non-commercial lagoon catch is estimated to be worth XPF 1,029,411,764 to fishers.

To obtain the total coastal commercial catch in French Polynesia, the above lagoon catch must be added to the catches of both the "bonitier" and "poti marara" fleets. This category of fishing ("coastal fishery" fleet in the official statistics) requires clarification, because of possible confusion with the "coastal commercial" category of the present study. DRMM (2015) states:

> The coastal fishery comprises two types of boat: the poti marara, (literally "flying-fish boats") which are small boats, 6-8 m in length, made from wood or fibre-reinforced plastic (FRP), and suitable for many different fishing techniques (trolling, vertical longlining or harpooning, operating in the coastal area in the vicinity of 15 nm) and the bonitiers ("skipjack boats"), which are 10-to-12 m long boats made from wood or FRP, targeting skipjack using pole-and-line.

DRMM (2015) indicates that, in 2014 the coastal fleet (45 bonitier and 448 poti marara) caught 3,516 mt of fish, made up of 568 mt from bonitier, and 2,948 mt from poti marara. With an average price to fishers of XPF 721/kg, the value of the coastal fleet production in 2014 was XPF 2,535,036,000.

The volumes and values of the production from coastal commercial fishing in French Polynesia in 2014 are summarised in Table 21-1.

Table 21-1: Coastal Commercial Fishing in French Polynesia in 2014

Category of French Polynesia Fishing	Volume (mt)	Value (XPF)
Lagoon commercial fishing	2,150	1,470,588,235
Bonitier and poti marara fishing	3,516	1,582,000,000
Total	**5,666**	**3,052,588,235**

Coastal Subsistence Catches

As stated in the section above, of the 4,300 mt catch from lagoon fisheries, it is estimated that the non-commercial component is 2,150 mt, worth XPF 1,029,411,764 to fishers.

To obtain total coastal subsistence production, the recreational and "semi-commercial" catch made outside the reef must be considered. This production is not covered by the statistical system, but is probably in the order of several hundred mt. (A. Stein, pers. com. December 2008). For the purpose of the present study, the catches from recreational fishing are considered as production for home consumption, and therefore as a component of subsistence fisheries.

The total coastal subsistence catch in French Polynesia in 2014 is estimated to be 2,350 mt, which was worth XPF 1,125,171,000 to fishers.

Locally Based Offshore Catches

DRMM (2015) gives information on the locally based offshore fleet in 2014:

- The fleet consisted of 62 longline vessels, from 65 vessels in 2013.
- 24 vessels were shorter than 16 m in length, 10 were between 16 and 20 m, and 28 were longer than 20 m.
- The total catch in 2014 was 5,390 mt, with albacore, yellowfin and bigeye being 81% of the total.
- 5,168 mt of the total catch was taken by freezer vessels and 222 mt was taken by vessels using ice.

The total catch in 2014 was worth XPF 2.829 billion to fishers (DRMM, unpublished data).

Foreign-Based Offshore Catches

A paper presented by the French Polynesia delegation to the third meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission stated that, in December 2000, all access agreements with foreign fishing fleets had ceased (Ponsonnet et al. 2007).

Freshwater Catches

Keith et al. (2002) give information on the freshwater fishes and crustaceans of French Polynesia. They indicate that there are 37 species of freshwater fish and 18 species of decapod crustaceans.

The most important of these for fishery purposes are the juvenile gobies (*Sicyopterus lagocephalus* and *S. pugnans*), *Macrobrachium*, tilapia, *Kuhlia* spp. and eels. No official estimate is made of the production from freshwater fishing in French Polynesia, but staff of Service de la Pêche familiar with the situation indicate that, although catches fluctuate considerably, 100 mt per year could be considered an average. (A. Stein, per. com. November 2008).

If this 100 mt of freshwater fisheries production is valued in a manner similar to that for coastal subsistence fisheries in French Polynesia (above), it would be worth XPF 47,879,616.

Aquaculture Production

Aquaculture in French Polynesia is dominated by pearl farming. There is also significant culturing of shrimp, finfish and giant clams, and production of much smaller amounts of tilapia, milkfish and rabbitfish.

The production of pearl farms in French Polynesia is not well known. This is due to both under-reporting and non-declaration of exports. According to the DRMM Statistical Bulletin (DRMM 2015), in 2014 the following is known with some degree of certainty:

- There were 6,808 hectares of pearl farms, with 82% by surface area located in the Tuamotu Islands, 16% in the Gambier Islands and 2% in the Leeward Society Islands.
- There were 573 pearl producers in French Polynesia, compared to 534 in 2006.
- 14,578 kg of pearls (8,355,000 individual pearls) were exported during 2014, with an FOB value of XPF 8,704 million.
- Almost all of the above exports were raw cultured pearls (98% by weight; 99% by value).
- 14,341 kg of raw cultured pearls (8,348,000 individual pearls) were exported during 2014, with an FOB value of XPF 8,622 million. The FOB value per gram was XPF 601.
- The remaining pearls were keshi pearls, mabe pearls, and pearls that have been worked (i.e. set in jewellery).
- There has been considerable variability in the value and quantity of raw cultured pearl exports since significant pearl exports from French Polynesia commenced in 1972. The highest value was reached in the year 2000 (XPF 20,073 million), and the maximum quantity occurred in 2010 (16,100 kg).
- The 2014 exports were about 41% of the maximum value reached in 2000, and 89% of the maximum quantity in 2010.

To estimate the French Polynesia 2014 pearl production, and the value to the farmer, certain assumptions are required:

- The declared exports represent about 75% of the pearl production.
- The FOB price can be reduced by 25% to approximate farm gate prices.

The above DRMM pearl production information, in conjunction with the above assumptions, suggests a 2014 French Polynesia pearl production of 14,341 kg of raw cultured pearls (8,348,000 individual pearls), with a farm gate value of XPF 8,622 million.

Information about other types of aquaculture (i.e. non-pearl) in 2014 in French Polynesia was obtained from DRMM aquaculture staff (G. Remoissenet, per. com. September 2015) and from DRMM (2015):

- The production of the shrimp *Litopenaeus stylirostris* was 89 mt, worth XPF 160 million at the farm gate.
- Giant clams for export to the aquarium markets are both harvested from the wild and collected/cultured. Of the 33,890 giant clams exported in 2014, DRMM staff believe about 13,500 of those clams originated from collection/culture, worth XPF 3,250,000 at the farm gate.
- There was a production of about 12 mt of orbicular batfish (*Platax orbicularis*; "paraha" in Tahitian), worth XPF 24 million.
- Tilapia, milkfish and rabbitfish are also cultured in the territory, but the amounts produced are very small compared to the other commodities above.

Table 21-3 is constructed from the above information. From the table it can be seen that the 2014 aquaculture production of French Polynesia was 101 mt, and 8.4 million pieces, worth XPF 8.8 billion.

Table 21-2: French Polynesia Aquaculture Production in 2014

Commodity	Volume		Farm gate value
	Metric tons	Pieces	
Pearls		8,348,000	8,622,000,000
Shrimp	89		160,000,000
Giant clams		13,500	3,250,000
Batfish	12		24,000,000
Total	**101**	**8,361,500**	**8,809,250,000**

Summary of Harvests

An approximation of the annual volumes and values of the fisheries and aquaculture production in French Polynesia in 2014 is given in Table 21-3.

Table 21-3: Annual Fisheries and Aquaculture Harvest in French Polynesia, 2014

Harvest Sector	Volume (mt)	Value (XPF)
Coastal Commercial	5,666	3,052,588,235
Coastal Subsistence	2,350	1,125,171,000
Offshore Locally based	5,390	2,829,000,000
Offshore Foreign-based	0	0
Freshwater	100	47,879,616
Aquaculture	8,361,500 pieces and 101 mt	8,809,250,000
Total	**8,361,500 pieces and 13,607 mt**	**15,863,888,851**

Figures 21-1 and 21-2 show the volumes and values of the 2014 French Polynesia fisheries production. Aquaculture is not shown in the volumes figure, due to the use of mixed units (pieces and mt).

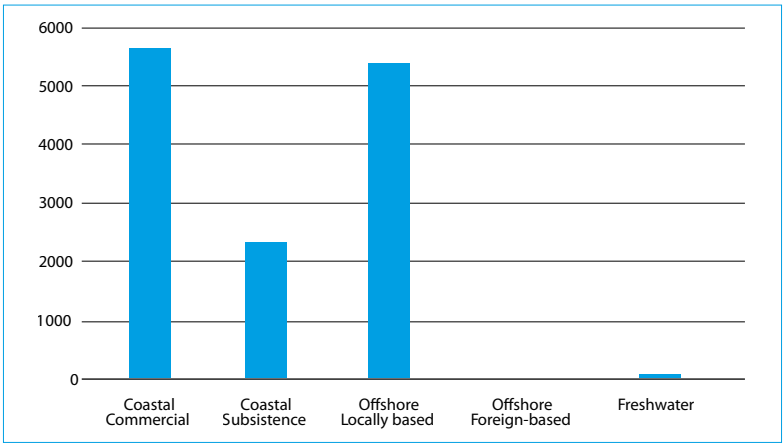


Figure 21-1: French Polynesia Fisheries Production 2014 by Volume (mt)

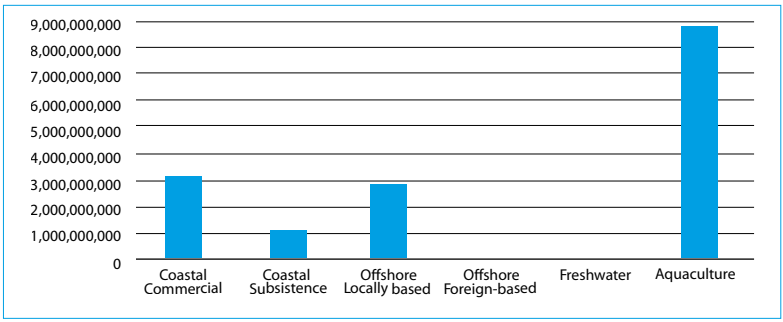


Figure 21-2: French Polynesia Fisheries Production 2014 by Value (XPF)

Past Estimates of Fisheries 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 French Polynesia from those three studies are presented in Table 21-4.[3]

Table 21-4: Estimates by the Benefish Studies of Annual Fisheries/Aquaculture Harvests

Harvest Sector	Estimate Year	Volume (mt, and pcs where indicated))	Nominal Value (XPF)
Coastal Commercial	1999	n/a	n/a
	2007	4,002	2,001,400,000
	2014	5,666	3,052,588,235
Coastal Subsistence	1999	n/a	n/a
	2007	2,880	1,149,120,000
	2014	2,350	1,125,171,000
Offshore Locally based	1999	n/a	n/a
	2007	6,308	2,457,515,000
	2014	5,390	2,829,000,000
Offshore Foreign-based	1999	n/a	n/a
	2007	0	0
	2014	0	0
Freshwater	1999	n/a	n/a
	2007	100	42,500,000
	2014	100	47,879,616
Aquaculture	1999	n/a	n/a
	2007	56	10,762,600,000
	2014	8,361,500 pcs and 101 mt	8,809,250,000

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

The apparent changes in production for the three 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 production levels for coastal commercial, coastal subsistence, and freshwater, change significantly between the years, but some of that change is due to the way in which the production was estimated. In

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

contrast, changes in production figures in the table for the offshore fisheries and aquaculture (based on the availability of better quality data) are likely to reflect real changes in the amounts being harvested.

21.2 Contribution of Fishing to GDP

Current Official Contribution

According to staff of the Institut de la Statistique de la Polynesie Francaise (ISPF), the last year for which detailed estimates of GDP were made was 2011. In subsequent years a rapid assessment of the GDP was prepared, but this rapid assessment does not contain any new information for the fishing sector. (A. Ailloud, per. com. September 2014). According to ISPF (2015) the GDP of French Polynesia in 2014 was estimated, by rapid assessment, to be XPF 538.6 billion.

Using ISPF (2015) and ISPF unpublished data, the contributions of fishing, pearl culture and other forms of aquaculture to GDP can be calculated (Table 21-5).

Table 21-5: Fish and Aquaculture Contribution to GDP (current prices, XPF millions)

	2008	2009	2010	2011
Pearl culture	3,258	3,653	3,060	2,965
Fishing and other forms of aquaculture	3,721	4,070	4,534	5,173
Total fishing and aquaculture	6,979	7,723	7,594	8,138
French Polynesia GDP	579,049	563,347	547,877	531,861
Aquaculture and fishing as a % of GDP	1.2%	1.4%	1.4%	1.5%

Source: ISPF (2015) and ISPF (unpublished data)

Method Used to Calculate the Official Fishing Contribution to GDP

According to staff of the Institut de la Statistique de la Polynesie Francaise (A. Ailloud, per. com. September 2014), important aspects of the method of calculating the contribution of fishing and aquaculture to GDP are as follows:

- The current base year for GDP estimations is 2005, and the methodology has changed little since then (including for the fisheries sector).
- The contribution of pearl culture to GDP is calculated separately to that of lagoon/coastal/offshore fishing and shrimp aquaculture. For

pearl culture the FOB export value of pearls and pearl products are multiplied by a value added ratio of 0.336 to obtain the value added (i.e. contribution to GDP).

- The amount of production from non-commercial fishing (5,740,000 kg in 2011) was determined through a 1987survey. The amount of production from commercial production (1,455,613 kg in 2011) is the sum total of estimates of commercial lagoon fishing, ocean fishing and shrimp aquaculture.
- The price paid to fishers is the retail fish of price divided by 1.35 (denominator adopted by the ISPF).
- The total price paid to fishers is multiplied by a value added ratio to obtain the total value added.
- 0.3361 is the value added ratio for the entire commercial agriculture sector (includes fishing and pearl culture). This ratio was determined by examining the records of 154 companies in the agricultural sector for the year 2005. The value added for subsistence fishing is taken to be 1 (i.e. assuming no intermediate consumption).

The following comments can be made about the ISPF method of calculating the contribution of fishing and aquaculture to GDP:

- For pearl culture, using the FOB price (rather than the farm gate price) results in an over-estimation of the contribution. However, this may compensate, to some degree, for the pearl exports that are not declared.
- The ISPF commercial fisheries production estimate looks very small relative to non-commercial production: 1,455,613 kg versus 5,740,000 kg. According to DRMM staff the respective production levels have become considerably more equal over the past 25 years, to the point that production by commercial lagoon fishing is approximately equal to non-commercial lagoon fishing. To get total commercial fishing production, the catches of the ocean fishing (poti marara, bonitier and longliner) must be added to the lagoon commercial production. According to information in DRMM (2015) the volume of all commercial fisheries production is about five times that of non-commercial production.
- Using a single value added ratio for all types of commercial fishing, aquaculture and agriculture appears inappropriate. Refining VARs to specific sub-sectors could provide much better estimates of value added.

Alternative Estimate of Fishing Contribution to GDP

Table 21-6, below, represents an alternative to the official method of estimating fishing contribution to GDP in French Polynesia. 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 21.1, above (summarised in Table 21-3), and determines the value added by using value added ratios (VARs) that are characteristic of the type of fishing concerned. Those VARs were determined through knowledge of the fisheries sector, and using by specialised studies (Appendix 3). The VAR for pearl culture was determined by examining actual company accounts of pearl culture operations in Cook Islands and Fiji.

Table 21-6, below, is for 2014, whereas the latest results of the official method of estimating fishing contribution to GDP in French Polynesia are for 2011.

It is not intended that the approach in Table 21-6 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.

Table 21-6: Fishing Contribution to GDP in 2014 Using an Alternative Approach

Harvest Sector	Gross Value of Production (XPF, from Table 23-3)	VAR	Value Added (XPF)
Coastal Commercial	3,052,588,235	0.55	1,678,923,529
Coastal Subsistence	1,125,171,000	0.70	787,619,700
Offshore Locally based	2,829,000,000	0.20	565,800,000
Freshwater	47,879,616	0.85	40,697,674
Aquaculture	8,809,250,000	0.45	3,964,162,500
Total (XPF)			**7,037,203,403**

From the table, a total contribution from fishing/aquaculture of XPF 7,037 million is estimated for 2014. In the section above on the official contribution, an official contribution of XPF 8,138 million was estimated for 2011. Bearing in mind that these two estimates are for different years, most of the differences between the estimates originate from the production of coastal/offshore fishing and the VARs applied. Reasonably good estimates of fisheries production are available at DRMM in Papeete.

Although 2011 is the latest year for which detailed estimates of GDP have been made, a "rapid accounting" was carried out for 2014, resulting in a

French Polynesia GDP estimate of XPF 538.6 billion (CEROM 2015).[4] The alternative estimate of the 2014 fishing contribution to GDP from the table above (XPF 7.037 billion) represents 1.3% of the 2014 GDP.

21.3 Exports of Fishery Production

A publication of the Institut de la Statistique de la Polynesie Francaise (ISPF 2015) provides levels of exports of French Polynesia (presumably, but not confirmed, from customs data). Table 21-7 extracts fisheries-relevant information.

Table 21- 7: Value of Fishery and Aquaculture Product Exports (XPF millions)

	2013	2014
Pearl products	7,881	8,819
Fish	1,093	1,241
Pearl shells	249	199
Total fisheries and aquaculture exports	9,223	10,259
Total all exports from French Polynesia	11,910	12,824
Fisheries and aquaculture exports as % of all exports	77.4%	80.0%

Source: ISPF (2015)

A more detailed accounting of exports is given in DRMM (2015). Table 21-8 takes that information and ranks the exports in terms of ascending value.

Table 21-8: Relative Importance of the Fisheries and Aquaculture Exports in 2014

	Volume		FOB Value (XPF millions)	% FOB value of all fisheries & aquaculture exports
	Pieces	Metric tons		
Aquarium fish	27,900		23.8	0.2%
Beche-de-mer		3.9	25.9	0.3%
Giant clams	33,890		46.8	0.5%
Coral and shells (pearl shell, trochus, green snail)		2,232	283.0	2.8%
Pelagic fish		1,445	1,140.0	11.2%
Pearls and pearl products	8,355		8,704.0	85.1%
Total	**70,145**	**3,681**	**10,223.5**	**100.0%**

Source : DRMM (2015)

4 This "rapid accounting" did not include detail about new fishing information.

21.4 Government Revenue from Fisheries

Access Fees for Foreign Fishing

In December 2000 all access agreements with foreign fishing fleets ceased (Ponsonnet et al. 2007). Consequently, no access fees for foreign fishing have been received since that time.

Other Government Revenue from Fisheries

Professional fishers are defined as those who are registered, or licensed, and they are issued with a professional identity card. All offshore fishers must be registered, whereas registration for coastal fishers is optional. Those carrying a licence are eligible for a substantial amount of financial assistance. There is no charge for the issue of the licence.

There is a small tax on the export of pearls. In 2009 this tax was changed from XPF 200 per gram to XPF 50 per pearl. In 2010 493 million XPF was collected from this tax (DRMM 2014). Originally, the tax was intended to finance pearl promotion work, but currently the proceeds go the territorial government's general fund (C. Lo, per com. September 2015).

In general, in French Polynesia the fisheries sector is not revenue generating, but rather is subsidy absorbing. A variety of subsidies are available for the various fisheries sub-sectors. DRMM (undated) lists several types of subsidies in each of three fishery categories: lagoon, coastal and offshore.

21.5 Fisheries-Related Employment

DRMM's Statistics Bulletin (DRMM 2015) is an excellent, comprehensive inventory of fisheries and aquaculture production in French Polynesia. By contrast, information on socio-economic aspects of fisheries in the territory is more difficult to locate. A household income and expenditure survey carried out in 2014 may contain fisheries-related employment information, but the results will not be published until mid-2016.

Some recent information on employment in the pearl industry is available (presumably because of the requirement for pearl farm workers to have a professional identity card). A review of labour in French Polynesia by the Institut de la Statistique de la Polynesie Francaise (ISPF 2015) states that the 2014 pearl workforce consisted of 1,060 employees. An ISPF study of the pearl industry (ISPF 2014) states that, at the end of December 2013, there

were 815 declared wage earners in pearl farming; however, as many of the pearl farms are run as family businesses, there are likely to be a large number of non-declared workers. The pearl industry also employed 85 people in jewellery production, 116 people in marketing/retailing and 230 in grafting.

An indication of the relative importance of the above employment is that, in 2014, there were 69,800 salaried employees in all of French Polynesia (ISPF 2015). The population of the territory was 262,059 in 2014 (SPC PRISM website).

Some older information is available on fisheries-related employment. Unpublished data from Service de la Pêche (the predecessor of DRMM) is used to construct Table 21-9. The table provides numbers of people involved in fishing activities and non-pearl aquaculture. For 2007 13 people were involved in non-pearl aquaculture, 1800 people in coastal fishing, 1025 in offshore fishing and 200 people in freshwater fishing.

Table 21-9: Employment in Fishing in French Polynesia

	Male/Female	2006	2007
Full time	M	2049	2127
	F	144	86
Part time	M	1589	1658
	F	391	408
Occasional	M	4270	4270
	F	1830	1830
Status not specified	M	200	200
	F		
Total	**M**	**8108**	**8255**
	F	**2365**	**2324**

Units: number of people
Source: Service de la Pêche (unpublished data)

In terms of smaller-scales fishing, the SPC ProcFish programme surveyed five sites in French Polynesia (Kronen et al. 2008). Table 21-10 is an extract from the report of the survey showing the importance of reef fisheries and the sale of fish.

Table 21-10: Involvement with Fisheries at the ProcFish Sites

Island	Households involved in reef fisheries	Households with fisheries as most important source of income
Fakarava	88.0%	12.0%
Maatea	78.6%	17.9%
Mataiea	77.4%	3.2%
Raivavae	93.3%	6.7%
Tikehau	91.7%	37.5%
Average across the five sites	**85.5%**	**14.5%**

Source: Kronen et al. (2008)

SPC (2013) uses ProcFish data to examine the ratio of men to women fishers across the Pacific. For the French Polynesia sites examined, about 78% of fishers are men and 22% are women.

21.6 Levels of Fishery Resource Consumption

Service de la Pêche analysed fish consumption in French Polynesia in 2003 (Service de la Pêche, unpublished data). Annual per capita fish consumption of 31.4 kg was determined through applying the following estimates:

- Domestic fish production of 9,102 mt, net weight
- Fish imports of 790 mt
- Fish exports of 1,731 mt
- The population of 259,596 people

This study reduced the domestic fisheries production ("live weight") by 30%. It is presumed that this was to obtain the actual food weight.

Bell et al. (2009) use information from household income and expenditure surveys conducted between 2001 and 2006 to estimate patterns of fish consumption in Pacific Island countries. The HIES were designed to enumerate consumption based on both subsistence and cash acquisitions. For the whole of French Polynesia the annual per capita fish consumption (whole weight equivalent) was 70.3 kg, of which 82% was fresh fish. Annual per capita consumption of fish was estimated to be 90.1 kg for rural areas, and 52.2 kg for urban areas.

Even considering that the two above studies measure different types of consumption (actual food weight versus whole weight equivalent), the results are strikingly different. If the Service de la Pêche results are modified to give

whole fish equivalent, the per capita consumption is 46.5 kg per year, compared to 70.3 kg in the Bell et al. study.

A study by the Fisheries Centre of the University of British Columbia (Bale et al. 2009) examined various studies estimating fish consumption in French Polynesia, and applied 2007 consumption rates to the various island groups: rural Tahiti (19.3 kg/person/year); Society Islands except Tahiti (43.7 kg/person/year); Austral Islands (43.7 kg/person/year); Marquesas (21.9 kg/person/year); and Tuamotu/Gambier (150 kg/person/year).

The SPC ProcFish programme carried out survey work at five islands (Kronen et al. 2008). That work included estimations of per capita fish consumption. The results (Table 21-11) indicate very high consumption of fresh fish at the sites.

Table 21-11: Fishery Product Consumption at ProcFish Sites (kg/person/year)

Island	Fresh fish consumption	Invertebrate consumption	Canned fish consumption
Fakarava	63.94	2.13	4.13
Maatea	59.91	0.26	5.09
Mataiea	45.13	0.96	2.37
Raivavae	46.42	18.03	3.95
Tikehau	66.59	1.90	4.08
Average accross the 5 sites	**55.55**	**4.91**	**3.95**

Source: Kronen et al. (2008)

A relatively new source of fish for domestic consumption has become available. Substantial longlining commenced from Tahiti in the early 1990s. In 2014 that fleet captured 5,390 mt of tuna and other pelagic fish, with 1,140 mt of that amount being exported (DRMM 2015). The 4,250 mt of non-exported fish represented about 23.6 kg for each of the 180,000 residents of Tahiti.

21.7 Exchange Rates

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

2000	2001	2002	2003	2004	2005	2006	2007
130	133	127	106	96	96	95	87
2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	
80.0	83.22	90.27	92.16	89.88	86.01	98.13	