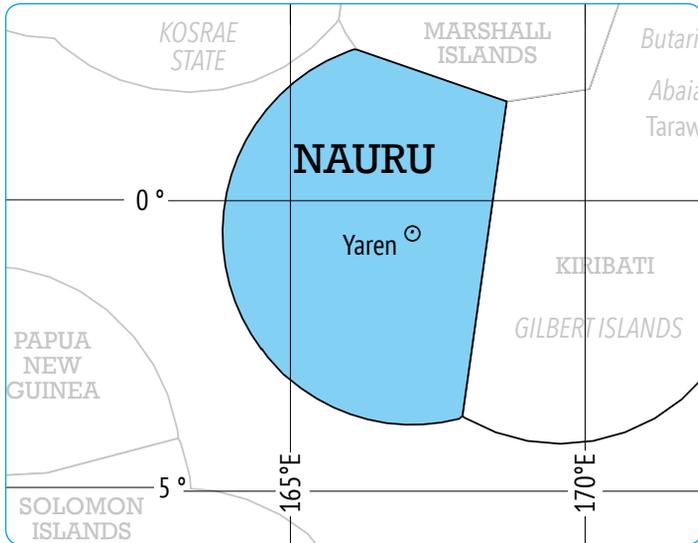


# 11 Nauru



## 11.1 Volumes and Values of Fish Harvests in Nauru

### Coastal Commercial Catches in Nauru

The following describe the major historical attempts to consolidate information on coastal fisheries production in Nauru:

- Dalzell et al. (1996), citing Dalzell et al. (1992), gave the following catch information: Subsistence fisheries – 98 mt, worth US\$219,600; Commercial fisheries – 279 mt, worth US\$628,605. The price was assumed to be US\$2.25 per kg for both the subsistence and commercial landings.
- Gillett and Lightfoot (2001) considered the above survey and other sources to produce an estimate of coastal commercial fisheries production of 315 mt (worth A\$514,250 [Australian dollars]), and an estimate of coastal subsistence production of 110 mt (worth A\$1,732,500).

- SPC conducted fieldwork around Nauru in October and November 2005. The aim of the survey work was to provide baseline information on the status of reef fisheries in the country (CoFish 2005). The survey estimated that the annual catch of finfish was 589.4 mt<sup>1</sup>, with most caught for subsistence (55–72%), some distributed on a non-monetary basis (17–20%) and some sold (8–27%). For invertebrates the annual catch was estimated at 27 mt, with all but some lobster catch used for home consumption.
- Gillett (2009) considered the above surveys, a 2006 HIES, the views of an expatriate fisheries adviser residing in Nauru, a report by an SPC fisheries specialist, a report by an FFA fisheries specialist, recent population changes, and the recent severe economic crisis in Nauru. The report stated: “For the purpose of the present study the 2007 coastal commercial fisheries production on Nauru is estimated to be 200 mt, worth A\$1,000,000.”

A fisheries specialist who is familiar with the CoFish survey of Nauru and is a former resident of Nauru (T. Adams, per. com. November 2008) provided additional information on coastal fishery production in Nauru, as follows:

- The CoFish survey period was somewhat atypical. There was a fuel shortage at the time of the survey, so there were no outboard skiffs operating these skiffs are the boats that normally supply most of the catch of tuna and coastal pelagics.
- According to the 1999/2000 creel survey data (biased towards the boat-based fishery) published in the Nauru Fisheries and Marine Resources Authority’s (NFMRA’s) fisheries newsletter (“Mwinoañan”), the average landings per month of tuna alone were in the order of 2.5 mt (31 mt per year), with other (mainly pelagic) landings adding another 2 mt per month. However, this would be an underestimate, since monitoring was probably not 100%.

Since the 2009 study, above, there have been some changes that are likely to have affected coastal fisheries production in Nauru. A resident fisheries adviser points out several of these changes (B. Yeeting, per. com. January 2016):

- Unlike in 2005 when the ProcFish survey was done, there are now hardly any expatriate fishers (i.e. Kiribati and Tuvaluan). There are, at the most, three or four that go out fishing every day, except for Sunday.

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<sup>1</sup> Communication from SPC indicates that a revised estimate of total catch is 419.96 mt (M. Kronen, per. com. March 2009).

- Some phosphate money payouts started again in 2013. With that there has been a noticeable decrease in fishing activities, with more people falling back to the old habits of buying food from the shops. In 2012–13 there used to be up to 20 one-man canoes going out fishing on most days of the week, and these were operated mostly by Nauruans. In recent years the numbers have decreased to about six at the most, four of which are operated by men from Kiribati and Tuvalu.
- With the phosphate payouts, Nauruans are able to afford fuel, and those with boats are able to take their boats out again. The number of outboard motor boat owners that are going out has increased slightly compared to during the economic crisis, but there is still a large number of boats (about 40%) that are not able to go out because the engines have seized up after being left un-used during the period of the economic crisis.
- Fishing in general over the last three years has not been as good as in 2011 and 2012, so the annual production in 2014 is likely to have dropped slightly.
- A creel survey was carried out in 2012, but there is currently a lack of a multiplier that will allow the use of the results to obtain an estimate of annual production.

Also, with respect to recent changes in Nauru coastal fisheries, a survey was carried out in July 2010 by a researcher and NFMRA coastal fisheries staff. Perceptions about changes in Nauru coastal fisheries were obtained from 113 fishers. 78% of respondents stated that fishing costs more today, 6% stated that fishing costs less, another 4% stated that fishing costs are the same today compared to five years ago, while 12% were not sure. (Deiye 2015).

The Annual Report of the Nauru Fisheries and Marine Resources Authority (NFMRA 2015) provides information about coastal fisheries in Nauru (Box 11-1).

#### Box 11-1: Coastal Fisheries in Nauru

Nauru's artisanal fleet comprises of small (less than 6m) powered skiffs, canoes operated by local fishers. The powered boats are mostly used for trolling and often target pelagics. Other types of fishing include dropline fishing, gillnetting, cast-netting, angling, spearfishing by free diving or with scuba and reef gleaning targeting reef fish and invertebrates which are mainly for subsistence. Some commercial fishing activities are practiced but mostly on a part-time scale (99% of fishers), meaning that fish catches are sold only when there is surplus after meeting the subsistence needs. Apart from trolling and deep bottom drop-lining, the coastal fishing activities are generally conducted on the reef flats and the reef slopes.

Source: NFMRA (2015)

The preliminary results from the SPC-assisted monitoring of pelagic fishing by Nauru-based skiffs indicate an annual catch in recent years of about 144 mt (D. Brogan, per. com. August 2015). This differs markedly from information contained in the Nauru report to the Scientific Committee of the Western and Central Pacific Fisheries Commission (NFMRA 2015), which stated catches by the “Nauru artisanal fleet” were 524 mt in 2014.<sup>2</sup>

An informal survey of fish prices was undertaken in mid-2015. The results are given in Table 11-1.

Table 11-1: 2015 Retail Fish Prices in Nauru

Commodity	Selling unit	Unit price (A\$)	Estimated price per kg (A\$)
Small reef fish	Per string (30–50 fish)	35	8
Big reef fish	Per string (5–10 fish)	50	10
Tuna (to local people)	Per kg	8	8
Tuna (to Chinese restaurant)	Per piece depends on size (e.g. 5–6 kg)	80	14
Flying fish	Per piece	1	
All fish (fish shop)	Per kg	8	8

Source: NFMRA (unpublished data)

SPC assisted in carrying out a household income and expenditure survey (HIES) in Nauru in 2012/2013. Unlike previous HIES work in Nauru and other Pacific Island countries, the 2012/2013 Nauru HIES was more fisheries-oriented, as described in the FSM section of this book. Staff of SPC’s Statistics for Development Division kindly carried out some additional fisheries-oriented analysis on the HIES data. The results are given in Table 11-2.

Table 11-2: Coastal Fisheries Information from the 2013 Nauru HIES

	Cash expenditure (A\$)	Non-cash expenditure (A\$)	Total expenditure (A\$)
Ocean fish	948,533	754,082	1,702,616
Reef fish	350,064	397,275	747,339
Invertebrates	8,357	26,477	34,834
Total fresh, chilled or frozen fish and seafood	1,306,955	1,177,834	2,484,789

Source: SPC (unpublished data)

2 This amount for the “Nauru artisanal fleet” is apparently based on the CoFish 2005 catch estimate of 589 mt, which includes all types of coastal fishing (including non-boat fishing).

Converting the expenditures in the table to volumes of fish carries many difficulties, especially in using appropriate prices. Nevertheless, doing so may give some insight into fish production. If a price of A\$8 is assigned to all categories of commercial fish and A\$5.60 to all categories of subsistence fish, then the HIES suggests commercial production of 163 mt and subsistence production of 210 mt (373 mt total).

Of the various types of information available, the HIES survey is judged to produce the best estimate of current coastal fisheries production in Nauru. The coastal commercial catch for 2014 is therefore estimated to be 163 mt, worth A\$1,306,955 to fishers.

### Coastal Subsistence Catches

Following the above approach, it is estimated that the production from coastal subsistence fisheries in Nauru in 2014 was 210 mt, worth A\$1,177,834.

### Locally Based Offshore Catches

There are currently no offshore fishing vessels operating from Nauru. The two longliners formerly owned by the Nauru Fisheries Trading Corporation (12 m and 15m) have not operated since the mid-2000s and have never been fully operational (Anon. 2008).

### Foreign-Based Offshore Catches

The Nauru report to the Scientific Committee of the Western and Central Pacific Fisheries Commission (NFMRA 2015) states that, in 2014, Nauru licensed 226 purse seiners and 10 longliners to operate in its EEZ. In support of those fishing fleets, 15 tankers and 2 fish carriers were also licensed.

Estimates of the volumes and values of catches of the four main commercial species of tuna in the area of the Western and Central Pacific Fisheries Commission have been made by the Forum Fisheries Agency, using data sourced from the Oceanic Fisheries Programme of SPC. The volumes and values can be determined using FFA (2015).

The volumes in FFA (2015) do not include bycatch, which is substantial for longlining. The values in FFA (2015) are overseas delivered values, which must be adjusted for transport costs to arrive at in-zone prices. Table 11-3 gives the adjusted volumes and values.

**Table 11-3:** Volumes and Values of Foreign-Based Offshore Fishing in the Nauru Zone

	2010	2011	2012	2013	2014
Purse seine volume (mt)	108,005	107,668	55,284	161,795	177,049
Longline volume adjusted for bycatch (mt)	107	204	267	204	332
Purse seine value adjusted for transshipment (US\$)	123,115,606	162,190,510	103,413,243	291,792,481	229,312,252
Longline value adjusted for delivery costs and value of bycatch (US\$)	685,847	1,485,884	1,653,598	1,063,250	1,887,746
Total offshore fishing volume (mt)	108,091	107,831	55,498	161,959	177,315
Total offshore fishing value (US\$)	123,801,453	163,676,394	105,066,841	292,855,731	231,199,998

In 2014 the foreign-based offshore fishing produced 177,315 mt of fish, with an in-zone value of US\$231.2 million (A\$282.1 million).

## Freshwater Catches

NFMRA (2005) states there are four depressions on the Nauru plateau, the most significant one forming Buada Lagoon, with a surface area of 30,000 m<sup>2</sup>. The other water bodies, known as ponds, are on the fringing coast, or just a few metres from the base of the escarpment. They range from about 40 m<sup>2</sup> to about 10,000 m<sup>2</sup> in area, either manufactured or naturally occurring. Anabar pond is the most significant, at 10,000 m<sup>2</sup>. The ponds have become infested with tilapia, which is not popular as a food item.

In the present study any harvesting from these brackish-water bodies is considered to be aquaculture.

## Aquaculture Harvests

NFMRA (2005) discusses the fall and rise of aquaculture in Nauru. Traditionally, juvenile milkfish were collected on the intertidal reef and reared in brackish ponds. The most important areas for farming were Buada Lagoon

and, to a lesser extent, the Anabar pond. Farming was divided among families, with walls and fences, and the people had an intricate social fabric intertwined with milkfish culture. The Mozambique tilapia (*Oreochromis mossambicus*) was introduced around 1961, with assistance from the (then) South Pacific Commission, but it was not accepted as a food source, mainly because of its small size and poor flavour. Tilapia eventually infested all of the milkfish ponds and competed with the milkfish for food. The result was that milkfish harvested from infested ponds took longer to grow to an edible size, and this caused many farmers to abandon their traditional practice of raising milkfish. In 2000 the Buada Lagoon Owners Association introduced 10,000 milkfish fry from Kiribati into Buada Lagoon, reaping 5,000 adult fish some months later.

A resident fisheries adviser updated the situation (B. Yeeting, per. com. January 2016), as follows:

- There are currently 35 pond owners registered with the Nauru Fisheries and Marine Resources Authority (NFMRA). These are family-owned backyard milkfish ponds, and some are old swimming pools, in addition to the one-hectare Buada lagoon.
- Over the last few years milkfish farming has not been active, and only a couple of family-owned ponds are known to still have milkfish from the last fry shipment from Tarawa. These remaining milkfish were harvested during pond preparation work, yielding about 150 kg of milkfish.
- NFMRA is reviving milkfish farming, and has almost completed an aquaculture holding facility, which will be used to receive, hold and condition milkfish fry on a regular basis from Tarawa, before distributing/selling to local pond owners to stock their ponds. There are two extension officers helping people to prepare their ponds and they will provide assistance and advice to pond owners on stocking, feeding and management of the ponds.
- Currently there is no aquaculture production in Nauru.

### Summary of Harvests

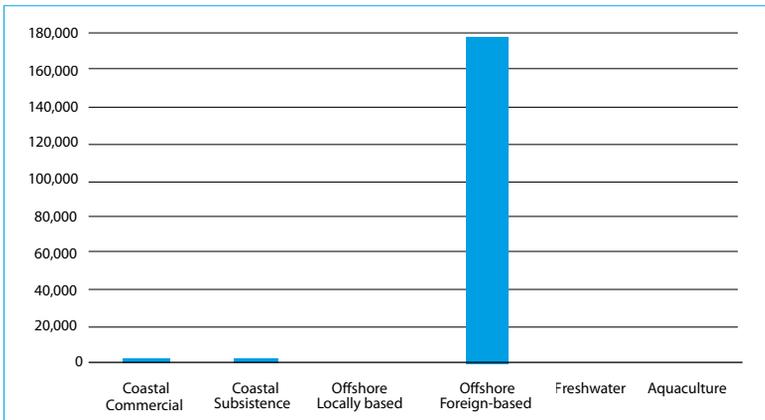
A crude approximation of the annual volumes and values<sup>3</sup> of the fishery and aquaculture harvests of Nauru in 2014 can be made from the above sections (Table 11-4).

<sup>3</sup> The values in the table are dockside/farm gate prices, except in the case of offshore foreign-based fishing, where the value in local waters (overseas market prices less imputed transshipment costs) is given.

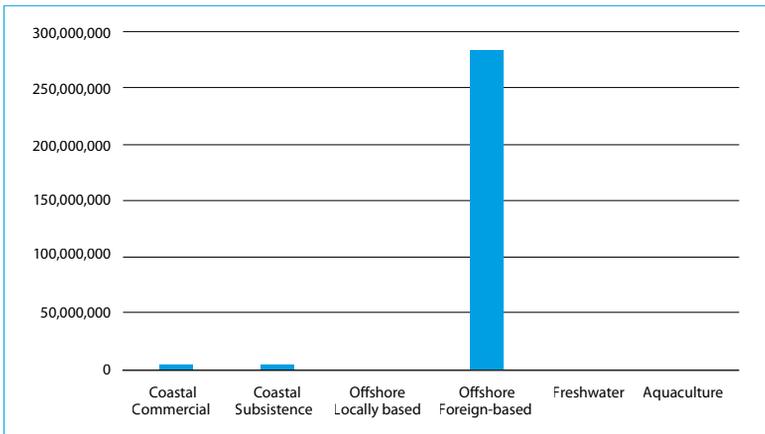
**Table 11-4:** Annual Fisheries and Aquaculture Harvest in Nauru, 2014

Harvest Sector	Volume (mt)	Value (A\$)
Coastal Commercial	163	1,306,955
Coastal Subsistence	210	1,177,834
Offshore Locally based	0	0
Offshore Foreign-based	177,315	282,100,000
Freshwater	0	0
Aquaculture	0	0
<b>Total</b>	<b>177,688</b>	<b>284,584,789</b>

Figures 11-1 and 11-2 show the volumes and values of the 2014 Nauru fisheries production.



**Figure 11-1:** Nauru Fisheries Production by Volume (mt), 2014



**Figure 11-2:** Nauru Fisheries Production by Value (A\$), 2014

## 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 fishery production levels for Nauru from those studies are provided in Table 11-5.<sup>4</sup>

**Table 11-5:** Estimates by the Benefish Studies of Annual Fisheries/Aquaculture Harvests

Harvest Sector	Estimate Year	Volume (mt, and pcs where indicated)	Nominal Value (A\$)
Coastal Commercial	1999	315	1,732,500
	2007	200	1,000,000
	2014	163	1,306,955
Coastal Subsistence	1999	110	514,250
	2007	450	787,000
	2014	210	1,177,834
Offshore Locally based	1999	50	387,000
	2007	0	0
	2014	0	0
Offshore Foreign-based	1999	41,000	57,000,000
	2007	69,236	95,201,620
	2014	177,315	282,100,000
Freshwater	1999	n/a	n/a
	2007	0	0
	2014	0	0
Aquaculture	1999	n/a	n/a
	2007	8	18,000
	2014	0	0

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

The apparent changes in production for the three-year period represents a real change in production in some cases, but this can also represent a change in the methodology for measuring the production (hopefully an improvement), or the availability of new information. In the table above, the production levels for coastal commercial and coastal subsistence change

<sup>4</sup> The earliest Benefish Study, Gillett and Lightfoot (2001), did not include aquaculture, freshwater fisheries or the non-independent territories.

significantly between the years, but some of that change is due to the way in which the production was estimated. For example, in the period between making the 2007 and 2014 estimates in the table, information from the 2012/2013 HIES (thought to be reasonably accurate) became available. In 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.

## 11.2 Contribution of Fishing to GDP

### Current Official Contribution

The official GDP of Nauru, and the “fisheries” contribution to GDP, is given in Table 11-6.

**Table 11-6:** Fisheries Contribution to Nauru’s GDP

	FY2010	FY2011	FY2012	FY2013	FY2014
Fisheries contribution to GDP (millions of A\$)	2.1	2.2	2.2	2.3	3.2
GDP at current prices (millions of A\$)	51.3	76.5	96.5	111.5	142.1
Fisheries as a % of GDP	4.1%	2.9%	2.3%	2.1%	2.3%

Source: Department of Finance and Economic Planning

### Method Used to Calculate the Fisheries Contribution to GDP

ADB (2007) states that compiling GDP estimates for Nauru is complicated by a number of special factors. These include pending salaries, Bank of Nauru checks, the treatment of the Refugee Processing Centre, large subsidies to government-owned business enterprises, large numbers of redundancies in the public sector, and gaps in the statistical collection.

The brief general explanation in ADB (2007) is the only available explanation of the GDP calculations: “GDP estimates have been compiled by industry using a mixture of the income and production approaches. Using the income approach, GDP is equal to compensation of employees plus gross operating surplus plus taxes on production and imports less subsidies. Using the production approach, GDP is equal to output less intermediate consumption.”

## Alternative Estimate of Fishing Contribution to GDP

Table 11-7, below, represents an alternative to the above method of estimating fishing contribution to GDP in Nauru. 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 11.1, above (summarised in Table 11-4), 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 by using specialised studies (Appendix 3).

It is not intended that the approach in Table 11-7 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 11-7:** Fishing Contribution to GDP Mid-2000s Using an Alternative Approach

Harvest Sector	Gross Value of Production (A\$, from Table 11-4)	VAR	Value Added (A\$)
Coastal Commercial	1,306,955	0.60	784,173
Coastal Subsistence	1,177,834	0.90	1,060,051
Offshore locally based	0	--	0
Freshwater	0	--	0
Aquaculture	0	--	0
<b>Total (A\$)</b>	<b>2,484,789</b>	<b>--</b>	<b>1,844,224</b>

The 2014 fishing contribution to GDP in the table (A\$1.8 million) is considerably less than the official fisheries contribution of A\$3.2 million (given in Table 11-6). Given the lack of details available on the official methodology it is difficult to speculate about why the difference is so great, other than simply stating that, if the official estimate used the production approach to estimate the fisheries sector contribution, the volume production from coastal fisheries in the two studies must be very different.

## 11.3 Exports of Fishery Production

Currently, there are no formal exports of fishery products from Nauru. The last export shipment of fresh tuna from the domestic longline operation was in 2001, and only seven shipments were ever made. Although the fish was of good quality and received a good price at auction in Japan, the local longline

operation was unprofitable for various reasons, including frequent mechanical problems and non-incentivised wage structures (Philipson 2007).

Informal exports of fish are made by passengers travelling on regular commercial flights. These shipments are often for family and friends in Australia, Fiji and Marshall Islands.<sup>5</sup> Although the Nauru Quarantine Office issues certificates for fish and other marine products that are being taken out of the country, to ensure that the products are in good condition, those certificates do not indicate the weights of the shipped products.

## 11.4 Government Revenue from Fisheries

### Access Fees for Foreign Fishing

Nauru government budget papers list the following foreign fishing access fees:

- FY 2013: A\$10.01 million
- FY 2014: A\$19.34 million

ADB (2014) estimates that “revenue and grants” received by the Nauru government for FY 2013 were A\$110.9 million, and for FY2014 were A\$141.4 million. Access fees therefore represented 9.0% of revenue/grants in FY2013, and 13.7% in FY 2014.

### Other Government Revenue from Fisheries

Information is not readily available on the Nauru government’s revenue from fisheries that is not associated with access by foreign fishing vessels.

## 11.5 Fisheries-Related Employment

In the early 2000s Nauru experienced an economic crisis that had a profound effect on employment, including fisheries-related employment. Some information on the crisis is given in Box 11-1.

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<sup>5</sup> In the present study fisheries officials in Marshall Islands report that a significant amount of “oily trevally” are shipped from Nauru to Majuro (G. Joseph, per. com. September 2015).

### Box 11-1: The Impacts of the Nauru Economic Crisis on Fisheries

With respect to recent changes in the fisheries employment situation, CoFish (2005) states that due to the economic crisis at the beginning of the decade, there has been a dramatic increase in reef fishing, gleaning and collecting. Dame (2006) gives some insight into another changing aspect of fisheries employment in Nauru. Fishing activity among Nauruans is likely to increase following the repatriation of I-Kiribati and Tuvaluan expatriate workers. Previously, following the winding down of mining operations, most fishing activity was carried out by I-Kiribati and Tuvaluan nationals. Generally, speaking Nauruans and other nationals normally bought fish from the I-Kiribati and Tuvalu fishermen and garden fresh produce from Chinese but with the repatriation of I-Kiribati and Tuvaluan workers and with increasing numbers of Chinese nationals also leaving the island, this is changing. Nauruans can no longer depend on expatriate workers to supply fish and garden produce and now Nauruans themselves are going out to gather the supplies from traditional work such as, fishing etc.

Source: CoFish (2005)

CoFish (2005) provides the results of fisheries-focused socio-economic surveys carried out in 11 of the 14 districts in Nauru in October and November 2005:

- The total resident population at the time was estimated to be 10,131 people, with 1230 households.
- 245 households were surveyed for income and expenditure, with 97% of these found to be engaged in fishing activities.
- 405 finfish fishers (357 men and 48 women) and 283 invertebrate fishers (149 women and 134 men) were interviewed. Survey results indicate an average of 3.7 fishers per household. In extrapolating this, the total number of fishers in Nauru is 4,513: 2,947 men and 1,566 women.
- The main source of income is from government employment (86%), with some people employed in the private sector.
- Fisheries do not play a significant role in income for households. For 5% of respondents it is their first income, and for 17% it is their second income.

The results of the Nauru 2011 census (Anon. 2012) provide some insight into participation in fishing, as follows:

- The main source of household income was, for 85% of all households, wages and/or salary. Seven percent of households' main income came from own business activities, 4% relied mainly on rent of land, and 2% on the sale of fish, crops or handicrafts.

- Just over half (51%) of all households in Nauru were engaged in fishing activities.
- Participation in fishing activities varied greatly between Nauru's 14 districts. Only 21% of the households in Nibok District were involved with fishing, while 96% of the households in Ijuw District were involved with fishing.
- Aquaculture was undertaken by only 2% of all households in Nauru, and this was entirely for subsistence. Aquaculture was mainly undertaken by households in Ewa District.

A baseline survey on the role of women in fisheries in Nauru was carried out in November 1997. The survey was conducted by Patricia Tuara (Women's Fisheries Development Officer at SPC), with the assistance of Julie Olsson (Director of Culture and Tourism, Ministry of Internal Affairs). The assessment was requested by the Government of Nauru in response to a felt need for information concerning the participation of Nauruan women in the fisheries sector. A summary of the results appears in Box 11-2.

#### **Box 11-2: The Role of Women in Nauru Fisheries**

The participation of women in fisheries activities differs depending on the ethnic background of the woman. The three main ethnic groups involved in fisheries are Nauruan women, I-Kiribati women and Chinese women. Nauruan women are mainly involved in the harvesting of resources, with less involvement in processing and marketing. I-Kiribati women are involved in harvesting, processing, and marketing of resources. Chinese women are involved in the marketing of resources. ii) Apart from the constraints imposed by society, the main restriction on women's participation in fisheries is competition for limited reef resources leading to over-exploitation. iii) Women involved in fisheries are unaware of support services available to them. iv) Government fisheries development has focused on projects that support the activities of fishermen and exclude fisherwomen. v) There are a lack of women undertaking formal marine studies and employed in technical positions in the marine public sector.

Source: Tuara (1998)

SPC (2013) uses data from its ProcFish programme to examine the ratio of men to women fishers across the Pacific. For Nauru, about 65% of fishers were men and 35% were women.

The results of the 2012/2013 Household Income and Expenditure Survey (Nauru Bureau of Statistics, 2014) contains some information on participation in fishing, as follows:

- The total resident Nauru population in 2012 was estimated to be 10,293, with 1,705 private households, over the 14 districts of Nauru.
- It was estimated that 26% of the households were engaged in fishing.
- About 8.94% of the Nauruan Labour force of 3,952 was involved in some form of fishing. This relates to about 353 fishers.
- With regard to full-time fishers, if “full-time” means those who have fishing as their main activity, only 1.26% of the Nauruan labour force appeared to have fishing as the main activity. This equates to about 50 fishers.
- With regard to part-time commercial fishers, if this is taken as those who have fishing as a secondary activity, about 7.7% of the Nauruan labour force was in this category, representing about 300 fishers.
- With regard to subsistence fishers, in Nauru all fishers, whether full-time or part-time, also fish for their subsistence, so this represents all fishers (i.e. 353 fishers).

There is a significant difference in results between the 2011 census and the 2012/2013 HIES. The census indicates that just over half (51%) of all households in Nauru were engaged in fishing activities. The HIES estimated that 26% of the households were engaged in fishing.

The NFMRA is a significant employer. It has 25 staff involved with coastal fisheries, 5 in oceanic fisheries, 13 in corporate services and a Chief Executive Officer, for a total of 44 staff. (B. Yeeting, per. com. January 2016).

## 11.6 Levels of Fishery Resource Consumption

Gillett and Lightfoot (2001) considered estimates of fisheries production, population and imports of fishery products, to arrive at an annual per capita consumption of fishery products on Nauru of 46.7 kg in the late 1990s. According to many studies, the consumption of fishery products in Nauru has changed considerably since the period covered by that study.

The SPC/CoFish study in Nauru in October and November 2005 examined the consumption of fishery products. Per capita consumption of fresh fish was recorded at being 46.5 kg/year. Finfish is consumed at an average of 3.8 times per week, while invertebrate consumption is much lower, with a frequency of about twice a month. Canned fish is also frequently consumed, averaging 2.4 times per week for most households, and annual per capita consumption at about 16 kg, which is considerable, but is only

about one-third of finfish consumption. For many families canned fish is an affordable substitute and can be cooked as soup and in many other ways to feed large families. The low consumption of invertebrates could be due to their over-harvesting. There is very high reliance on fresh fish, with many households interviewed consuming their own catches or buying fish from, or being given fish, by relatives and neighbours. The results of the CoFish survey with respect to fish consumption are summarised in Table 11-8.

**Table 11-8:** Consumption of Fishery Products on Nauru According to the SPC/CoFish Survey

Aspect (units)	Measure
Quantity fresh fish consumed (kg/capita/year)	46.45 ( $\pm 2.74$ )
Frequency fresh fish consumed (time/week)	3.79 ( $\pm 0.14$ )
Quantity fresh invertebrate consumed (kg/capita/year)	1.63 ( $\pm 0.19$ )
Frequency fresh invertebrate consumed (time/week)	0.53 ( $\pm 0.04$ )
Quantity canned fish consumed (kg/capita/year)	15.86 ( $\pm 1.12$ )
Frequency canned fish consumed (time/week)	2.42 ( $\pm 0.12$ )

Source: CoFish (2005)  
245 households surveyed

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 the Nauru the annual per capita fish consumption (whole weight equivalent) was 55.8 kg, of which 96% was fresh fish.

Two different studies have covered per capita catch rates for Nauru:

- Dalzell and Debaio (1994) estimated a 1991 per capita catch rate of 45 kg per person per year.
- The present study estimates a 2014 coastal fisheries catch rate of 35 kg per person per year (i.e. 373,000 kg; 10,660 people)

## 11.7 Exchange Rates

Nauru uses the Australia dollar (A\$). The average yearly exchange rates (A\$ to the US dollar) used in this book are as follows:

2007	2008	2009	2010	2011	2012	2013	2014
1.19	1.10	1.12	0.10	0.98	0.96	1.12	1.22