



Secure Fisheries  
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# FISH CONSUMPTION SURVEY

Mauritius



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REPORT/RAPPORT: SF-FAO/2013/30

Fish Consumption Survey

Mauritius

*GCP/RAF/466/EC SmartFish Project*

**Fishermen Investment Trust.** 2013. Fish Consumption Survey, Mauritius Report/Rapport: SF-FAO/2013/30. FAO-SmartFish Programme of the Indian Ocean Commission, Ebene, Mauritius.

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## Acknowledgements

The Fishermen Investment Trust would like to thank Mr Signa Davide, Mr Ansen Ward and Mrs Clotilde Bodiguel of the IOC FAO SmartFish Programme for their continuous support during the course of this study. Our thanks are also extended to Mrs Roshini Brizmohun Gopaul of the University of Mauritius for leading the team of enumerators and providing valuable assistance for the analysis and finalisation of this report.

Our sincere thanks to Statistics Mauritius for initial guidance and to the following enumerators and Data analysts from the University of Mauritius for their dedication and hard work: Ms Zainal Kareemun, Mr Ludovic Baya, Mr Roomesh Doolum Ms Mehtaab Bibi Conhyea, Ms Varsha Ooma Raderam, Ms Ishtee La Rose, Ms Khawla Domun, Ms Teesha Baboorun, Ms Yogeshwaree Rambojun, Mr Nadeem Durbarry

We would like to thank the EU for providing the necessary funding for this project through the IOC SmartFish programme.

Last but not the least, our sincere appreciation go to the staff of the Fishermen Investment Trust for ensuring the success of this project and to all the people who gave us their strong cooperation and assistance during the field survey, which included hundreds of respondents around Mauritius. This survey would not have been possible without the collaboration and support of everyone involved.

Satish Hanoomanjee

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## Executive summary

Very little is known about the habits of fish consumers in Mauritius. In this context and with assistance from the EU through the IOC FAO/SmartFish programme, a fish consumption survey was conducted to provide an insight into the habits of Mauritian fish consumers.

This involved interviewing one thousand respondents in 21 localities around Mauritius. The enumerators worked in teams of two and interviewed consumers at various sites around the island. Respondents were from both rural<sup>1</sup> and urban areas.

The results give an excellent snapshot of fish consumption habits in Mauritius. Analysis of the results shows a per capita consumption of fresh and frozen fish of 23.1 kg/year and per capita consumption of other fishery products of 16.8 kg/year. Hence, Mauritians consume some 40 kg of fish and other fishery products annually. It has to be noted that non-consumers/vegetarians were excluded from these calculations. The official figures from Statistics Mauritius indicate a per capita consumption of 21 kg/year in 2011, similar to FAO statistics.

The study shows that culinary habits with regards to fish have changed very little over the years with Mauritians preferring fish curries both in rural and urban areas. Fresh fish is preferred though frozen fish is also consumed. People in Mauritius prefer to eat whole fresh fish; however this is slowly changing towards ready cleaned and packed frozen products.

The study revealed that 88 percent of respondents preferred local fish rather than imported fish and one of the reasons given for those preferring imported fish (12 percent of the respondents) is a perceived better quality (42.1 percent). One of the main reasons for not buying and consuming fish or other fishery products is associated to religious beliefs (e.g. many Hindus do not consume fish or meat).

Many respondents were quite knowledgeable with regards to fish quality, though quite a number of people interviewed failed to give correct responses. However, there appears to be a general lack of awareness amongst the general public as to the existence of Omega 3 & 6 in fish. Sixty-two percent of respondents are also keen to try new products such as fish sausages. People from the rural coastal areas are greater consumers of the Cordonnier (rabbit fish or *Siganus sutor*), probably due to the better availability of the fish in those areas. Interestingly, it was also noted that perceptions and some oral traditions are still predominant within the society e.g. hallucinations caused from eating the Cordonnier. These need to be addressed through awareness campaigns, if Cordonnier aquaculture is to be promoted.

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<sup>1</sup> Rural refers to locations outside main towns. Most of the villages in the coastal belt may be classed as rural areas.

Many respondents (80.1 percent) agreed that cleanliness of the places where they buy fish definitely affects their purchasing habits. The main problems encountered with fish or other fishery products are allergies (31.9 percent), bad quality of fish (26.7 percent) and food poisoning (19.8 percent). These problems could be a result of, inappropriate conservation methods, poor sanitary conditions, inadequate handling of fish and preparation in the home and/or consumption of spoilt fish. Since Mauritius is a tropical island it is important that consumers are fully aware of the main factors of fish spoilage and basic hygiene. This could also form part of an awareness campaign. It was also noted that 40.6 percent of respondents do not think that fish is cheaper than meat. Again, this could be a question of availability and the marketing chain of fish.

A key recommendation is the need for further awareness campaigns to educate the population on fish quality, the nutritional benefits of eating fish and alternative preparation and cooking techniques.

The present study could serve as a reference for future investigations relating to fish consumption habits in Mauritius.

## Résumé exécutif

On sait peu de choses sur les habitudes de consommation du poisson à Maurice. C'est dans ce contexte qu'une enquête sur la consommation du poisson a été lancée, afin d'avoir une idée des habitudes des consommateurs mauriciens. Cette étude a été réalisée grâce à l'assistance du Programme SmartFish, financé par l'Union européenne.

Une centaine de personnes ont été interviewées dans 21 localités de Maurice. Les enquêteurs ont travaillé par groupe de deux et ont interviewés des consommateurs dans divers sites de l'île. Les personnes interviewées venaient de zones rurales<sup>2</sup> et urbaines.

Les résultats ont donné un excellent aperçu des habitudes des consommateurs de poisson à Maurice. L'analyse de ces résultats montre que la consommation de poisson frais et congelés par personne est de 23.1kg/an et que la consommation d'autres produits de la pêche est de 16.8kg/an. Aussi, les mauriciens consomment quelque 40 kg de poissons et autres produits de la pêche annuellement. Il faut noter que les végétariens et non consommateurs ont été exclus de ce calcul. Les chiffres officiels du Bureau mauricien des Statistiques, tout comme les statistiques FAO, indiquent que la consommation par habitant est de 21kg/an en 2011.

L'étude montre que les habitudes culinaires pour le poisson ont très peu changé au fil des ans : les mauriciens préférant les currys de poisson aussi bien dans les zones rurales qu'urbaines. Le poisson frais est préféré au poisson congelé, qui est tout de même également consommé. La population mauricienne préfère manger des poissons frais entiers. Cependant, cette habitude est tout doucement en train d'évoluer vers des produits surgelés, nettoyés et emballés.

L'étude révèle que 88% des personnes interrogées préfèrent le poisson local au poisson importé. L'une des raisons données par les 12% de répondants préférant le poisson importé est la meilleure qualité (pour 42.1% d'entre eux). L'une des raisons principales expliquant l'absence d'achat et de consommation de poisson ou autres produits de la mer est la croyance religieuse (par exemple, de nombreux hindous ne consomment ni poisson ni viande).

De nombreux répondants avaient pas mal de connaissances sur la qualité du poisson, même si un certain nombre de personnes interrogées n'ont pas pu donner de bonnes réponses. Cependant, un manque de prise de conscience général au sein du grand public au sujet de l'existence des Oméga 3 et 6 dans le poisson est apparu. Soixante-deux pourcent des répondants ont indiqué être favorable au test de nouveaux produits tels que des saucisses de poisson.

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<sup>2</sup> C'est-à-dire en dehors des principales villes. La plupart des villages côtiers peuvent être classés comme zones rurales.

Les populations rurales côtières sont de grandes consommatrices de Cordonniers (*Siganus sutor*). Cela est probablement dû au fait de sa disponibilité dans ces régions. Il a également été noté que les perceptions et traditions orales sont toujours ancrées dans les sociétés. Par exemple, le risque d'hallucinations pouvant être causées par l'ingestion de Cordonnier. Cela pourrait faire l'objet d'une campagne de sensibilisation si l'aquaculture du Cordonnier devait être promue.

De nombreux répondants (80.1%) ont affirmé que la propreté de l'endroit où ils achètent leur poisson influence leurs habitudes d'achat. Les principaux problèmes rencontrés sont les allergies au poisson ou autres produits de la pêche (31.9%), la mauvaise qualité du poisson (26.7%), et l'intoxication alimentaire (19.8%). Ces problèmes résulteraient de méthodes de conservation inappropriées, de mauvaises conditions sanitaires, une mauvaise manipulation du poisson, et une préparation maison et/ou consommation de poisson abimés. Maurice étant une île tropicale, il est important que les consommateurs soient pleinement conscients des principaux facteurs qui abiment le poisson et des principes d'hygiène de base. Ces éléments pourraient également faire l'objet d'une campagne de sensibilisation. Il faut également noter que 40,6% des répondants ne pensent pas que le poisson est meilleur marché que la viande. Là encore, il est peut-être question d'une disponibilité et d'un marketing de la chaîne du poisson.

Une recommandation clé est le besoin d'une campagne de sensibilisation pour éduquer la population à la qualité du poisson, les bénéfices nutritionnels qu'il représente et les méthodes de préparation et de cuisson alternatives.

La présente étude pourrait servir de référence à de futures recherches sur les habitudes de consommation du poisson à Maurice.

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## Acronyms and abbreviations

<b>AFRC</b>	Albion Fisheries Research Centre
<b>EEZ</b>	Exclusive Economic Zone
<b>EU</b>	European Union
<b>FAO</b>	Food and Agricultural Organization
<b>FIT</b>	Fishermen Investment Trust
<b>g</b>	Grams
<b>GDP</b>	Gross Domestic Products
<b>IOC</b>	Indian Ocean Commission
<b>Kg</b>	Kilogram
<b>Km<sup>2</sup></b>	Kilometre square
<b>Rs</b>	Rupees
<b>US \$</b>	US Dollars

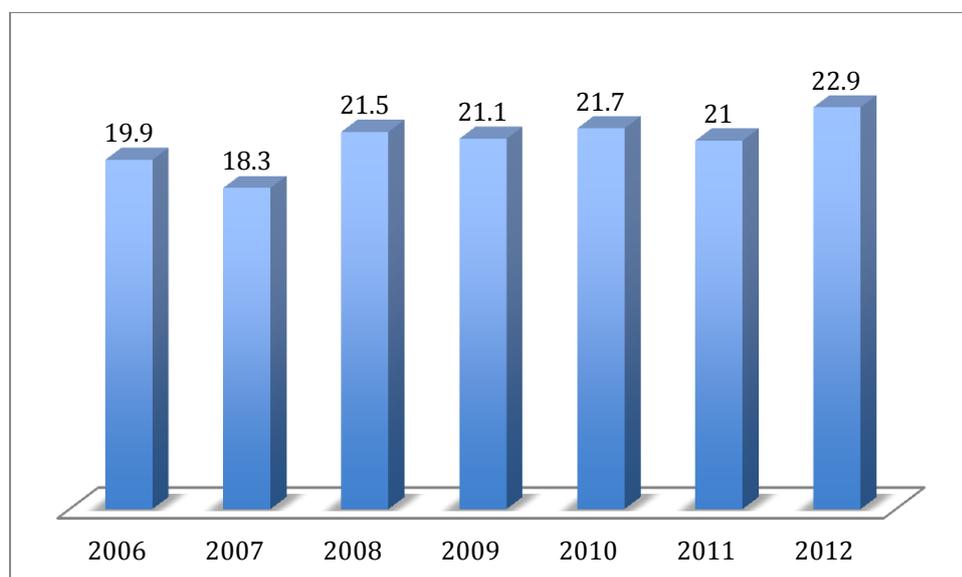
# 1. Introduction

## 1.1 Background

Mauritius is located in the middle of the Indian Ocean. The economy is mainly dependent on services (an estimated 71.8 percent, 2011) and industries (23.8 percent, 2011), while agriculture and fisheries contribute some 4.4 percent to the GDP<sup>3</sup>. The estimated GDP per capita was US \$8,665 in 2010<sup>4</sup>. The potential of the vast Exclusive Economic Zone (EEZ) of 2.3 million square kilometres (of which some 396,000 km<sup>2</sup> are co-shared with Seychelles) is as yet unexplored. It is mainly the lagoons and banks that are exploited by the domestic fisheries sector, but the domestic fleet is not able to supply enough fish to satisfy local demand. Mauritius currently imports some 11,500 tonnes of fish and fishery products per year to satisfy the demand of Mauritians and the growing numbers of tourists visiting the island.

The fisheries sector contributed around 1.5 percent to the GDP in 2012. In Rodrigues, the fisheries sector contributes a greater share to the economy and is the island's largest employer. While the total local production is small at about 4,125 tonnes in 2012, Mauritius fish processing and the export sector dominate seafood activities concentrated in the so-called 'Seafood Hub'. Seafood turnover amounted to some 22.28 billion rupees in 2012.

**Figure 1: Per capita fish consumption**



Source: Ministry of Fisheries, unpublished data

Fish is an important source of protein in the local diet and the per capita consumption of fish stood at 21.0 kg in 2011 and 22.9 kg in 2012 (Figure 1), representing one quarter of total animal protein intake<sup>5</sup>.

<sup>3</sup> 2011 estimate, data released in February 2012.

<sup>4</sup> Global Finance, Country Economic Reports & GDP data, June 2012

<sup>5</sup> FAO General Economic Data, 2006

It is worth noting that per capita consumption rates are estimates derived from the general population, inclusive of both consumers and non-consumers. Thus, per capita rates are primarily useful for trend analyses rather than representing actual consumption. Studies that specifically address consumption rates for commercial fish species are lacking or have probably never been carried out in Mauritius.

It should be noted that there is no foolproof methodology that will provide an accurate depiction of all people in a population that consume fish. This is due, in part, to the inherent variability in fish-consuming populations and in part to the inability of any survey (methodology) to achieve unbiased sampling due to various factors. Hence, when using the results of fish consumption surveys, it is important to recognize the limitations of the estimates derived and it is equally important to exercise prudence and discretion in making generalizations or assumptions about study results and their validity.

Various documents were consulted during the course of this survey namely AMSAT International, 2011 that looks at fish and animal protein consumption in Timor-Leste; Fish Consumption Survey in Banda Aceh; ARC/FAO, Survey of Fish Consumption in Madras, BOBP, 1992; Baya, J. F. L., 2013. A Conceptual Framework for the Investigation of Fresh Fish Availability and Consumption in Regions of Saint Pierre, Rose Hill and Quatre Bornes in Mauritius, Kareemun.Z.B, 2013, an evaluation of consumer behaviour relating to aquaculture and food security in Mauritius. Other documents have also been referred to in this report.

The survey provides information on fish (fresh and processed) consumption habits of Mauritians, including demand, supply, availability and market chains issues and complements baseline information related to fishery product development, improving supply chains to market, and strengthening/diversifying income opportunities of fisher families.

## **1.2 Objectives**

The objectives of the survey were to estimate current levels of fish consumption and obtain related information on supply, demand and availability and the way Mauritians prefer to eat fish. The terms of reference for the survey are provided in Annex 1.

### 1.3 Survey locations

Table 1 provides a summary of the locations in Mauritius where consumers were interviewed for the survey.

**Table 1: Location of sites**

No	Location	Place		Team	No. of days	Dates	
1	Curepipe	Monoprix	Supermarkets	A		25/10/13	26/10/13
2	Phoenix	Jumbo		B		25/10/13	26/10/13
3	St. Jean	Shoprite		C		25/10/13	26/10/13
4	Belle Rose	Super U		D	16	25/10/13	26/10/13
5	Flacq	Winners		A		29/10/13	30/10/13
6	Cascavelle	Pick & Pay		B		29/10/13	30/10/13
7	Mahebourg	King Savers		C		29/10/13	30/10/13
8	Rose Belle	Moulin		D	16	29/10/13	30/10/13
9	Quatre Bornes	Intermart		A		31/10/13	01/11/13
10	Vacoas	London Way		B		31/10/13	01/11/13
11	Beau Bassin	Spar		C		31/10/13	01/11/13
12	Riviere Noire	London Way		D	16	31/10/13	01/11/13
13	Tamarin	Shoprite				6/11/13	
14	Port Louis	Markets	A		02/11/13		
15	Quatre Bornes		B		02/11/13		
16	Vacoas		C		02/11/13		
17	Rose Hill		D	16	02/11/13		
18	Rose Hill	Fish Shops	A		05/11/13	06/11/13	
19	St. Paul		B		05/11/13	06/11/13	
20	Tamarin	Landing stations	C		05/11/13	06/11/13	
21	Cap Malheureux		D	16	05/11/13	06/11/13	

4 teams of 2 enumerators: teams A to D



## 1.5 Structure of the report

The report consists of five distinct sections:

1. Introduction including the background, objective, survey locations, output and report structure;
2. Survey methodology;
3. General demographic features of the survey respondents;
4. Results of the survey with comments and analyses where appropriate;
5. Conclusions and recommendations.

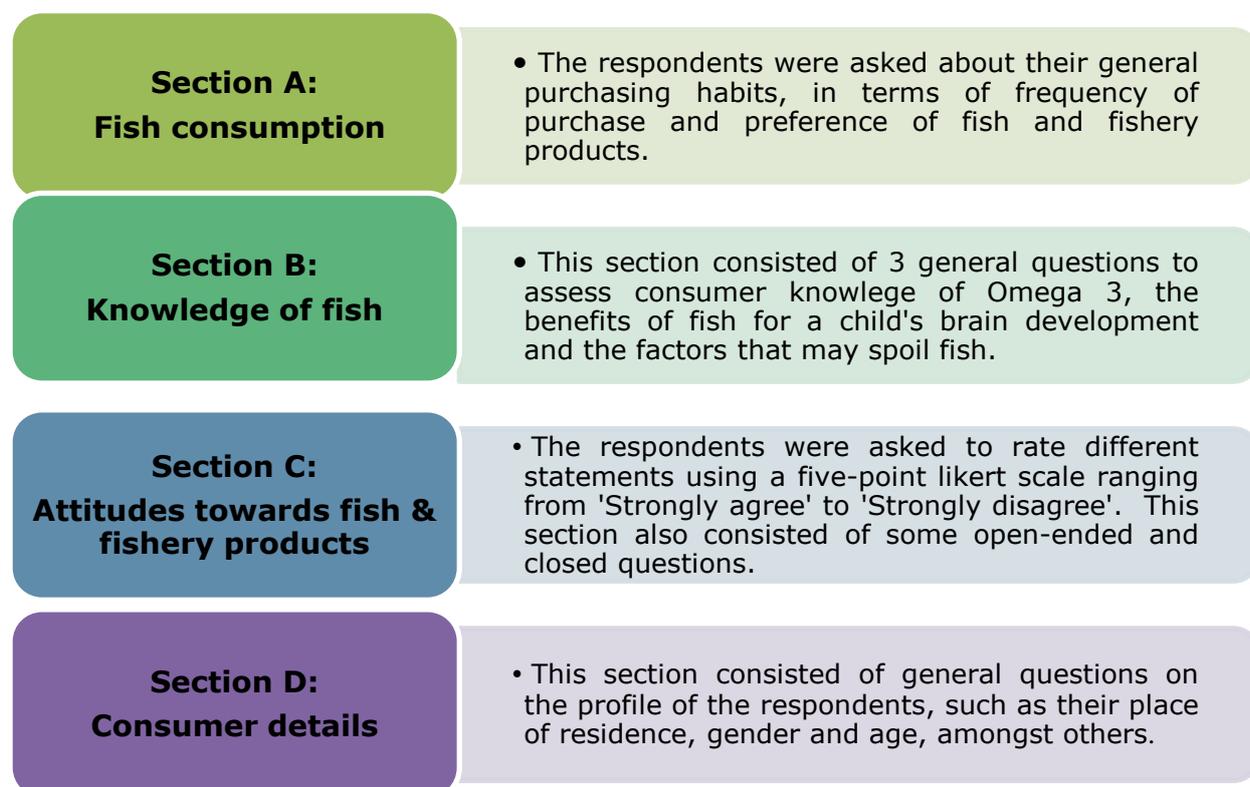
## 2. Methodology

The survey was a formal type questionnaire survey involving face-to-face interviews with consumers at key locations.

### 2.1 Questionnaire design process

The questionnaire was designed based on previous consumer surveys carried out in Mauritius and other countries and was reviewed by FAO experts in Fisheries and Marketing prior to finalization. Both open-ended and closed questions were included in the questionnaire. The open-ended questions allowed the respondents to freely express themselves while the closed questions consisted of Likert scaled questions to assess the attitudes of respondents.

The questionnaire was divided into four major sections as shown in Figure 3 (the full questionnaire can be found in Annex 2).

**Figure 3: Four sections in the consumer questionnaire**

## 2.2 Pre testing process

The questionnaire was pre-tested at the Albion Fisheries Research Centre (AFRC) in October 2013 with 20 interviewees to detect any ambiguities in the questions. The enumerators were trained on how to carry out the interviews and to make sure the time taken for per interview does not exceed more than 10 minutes. After the pre-testing, some questions were reformulated, as some respondents encountered difficulties and/or were confused with some of the questions asked. The survey questionnaire can be found in Annex 2.

The assistance of an FAO consultant was very much appreciated in the finalization of the questionnaire and guidance during the pre-trial survey.

## 2.3 Locations and selection process

Twenty-one different regions were randomly selected around the island. Face-to-face interviews were carried out at the various sites identified namely supermarkets, local markets, fish landing sites and fish shops.

For the purpose of this study, a representative sample of 1,000 respondents was randomly identified at the various locations around the island. It should be noted that Statistics Mauritius interviews some 900 consumers for its household survey every month.

## **2.4 Data collection**

Face-to-face interviews, using the questionnaire in Annex 2 were carried out for this survey. Initially, respondents were briefed as to the purpose of the interview and were assured of the confidentiality of their responses. The open-ended questions were asked in a probing, unbiased manner to encourage the respondents to voice their opinions.

The main constraint encountered during the survey, was the limiting time factor for the consumers.

## **2.5 Responsibilities of enumerators**

The enumerators were fully briefed on the questionnaire and mock exercises carried out at the Fishermen Investment Trust's (FIT) office in Albion. Furthermore, a pre-trial survey was also carried out on some twenty people at the AFRC. Results of the pre-trial and constraints identified were discussed at length and advice given to the enumerators who were tasked with the following:

- Fully understand the questions in the questionnaire and apply them to the local context;
- Cooperate with other survey team enumerators during the fieldwork to ensure that the survey is carried out in a timely and professional manner;
- Briefly explain the purpose of the interview to the respondents and ensure them of the confidentiality of their responses;
- Make sure that the interview does not take more than 10 minutes per respondent;
- Conduct a specific number of interviews each day. (The team leader - based on prior experience and field conditions - established a daily quota);
- Make sure all questionnaires are completed in the field and check thoroughly each questionnaire for completeness, legibility and accuracy;
- Keep in regular contact with the team leader and supervisor and request immediate assistance if needed.

## 2.6 Data analysis

The data collected were evaluated using the Statistical Package for Social Sciences (SPSS) Version 17.0 and Microsoft Excel 2007. All questionnaires were coded to conceal the identity of the respondents due to the confidential nature of the work. The outputs were presented by means of charts and frequency distributions tables (see Annex 2.1)

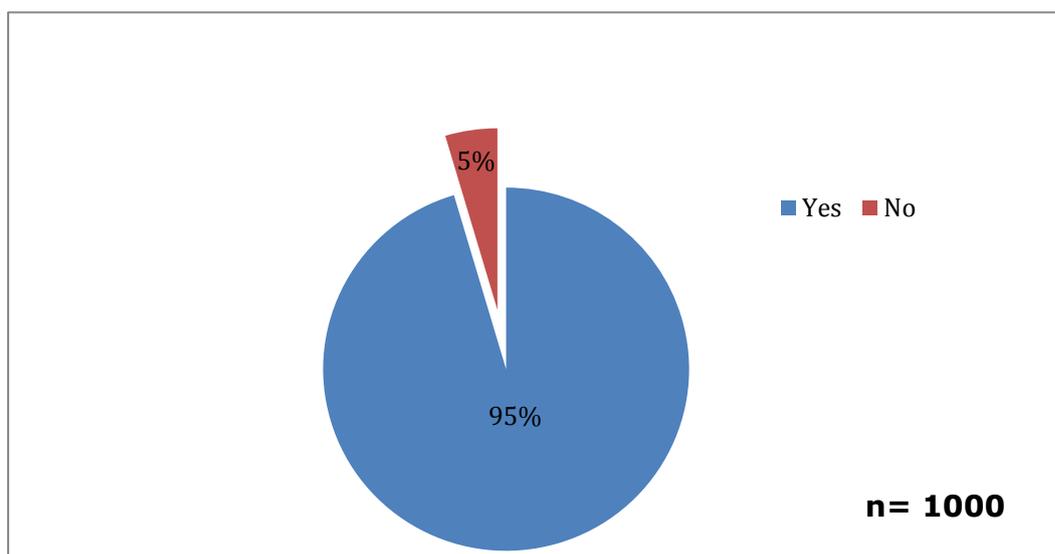
## 3. Results

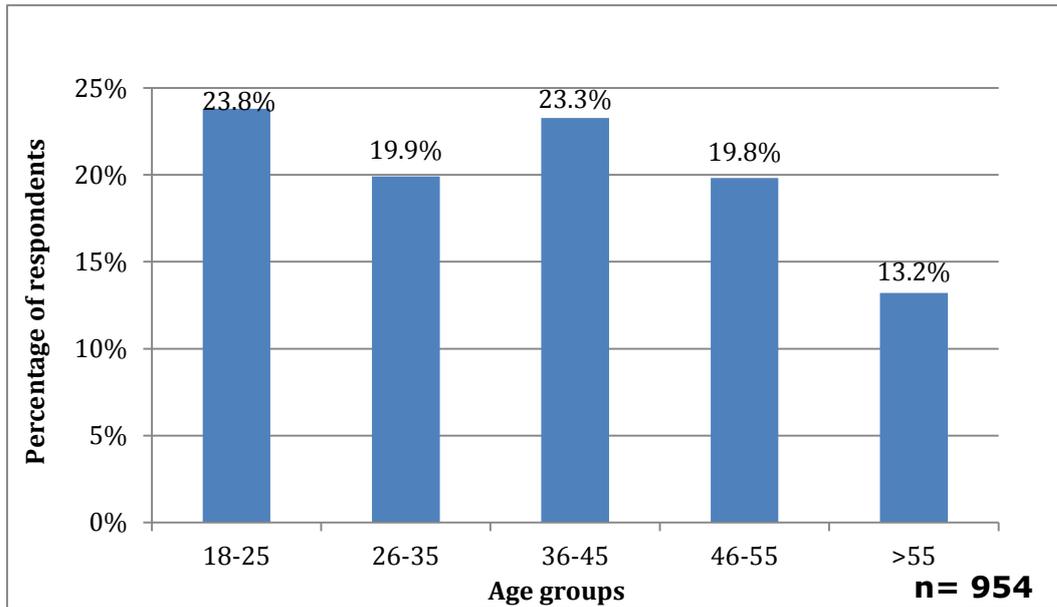
The results presented in this chapter relate to fish consumption per capita, consumption habits (purchases and preferences), knowledge of consumers with regards to the benefits of eating fish and other fishery products, basic hygiene and other factors such as the handling and conservation of fish. Attitudes toward fish consumption were also investigated. The results also provide an insight into the general characteristics of the consumer.

### 3.1 Section A: Fish consumption in Mauritius

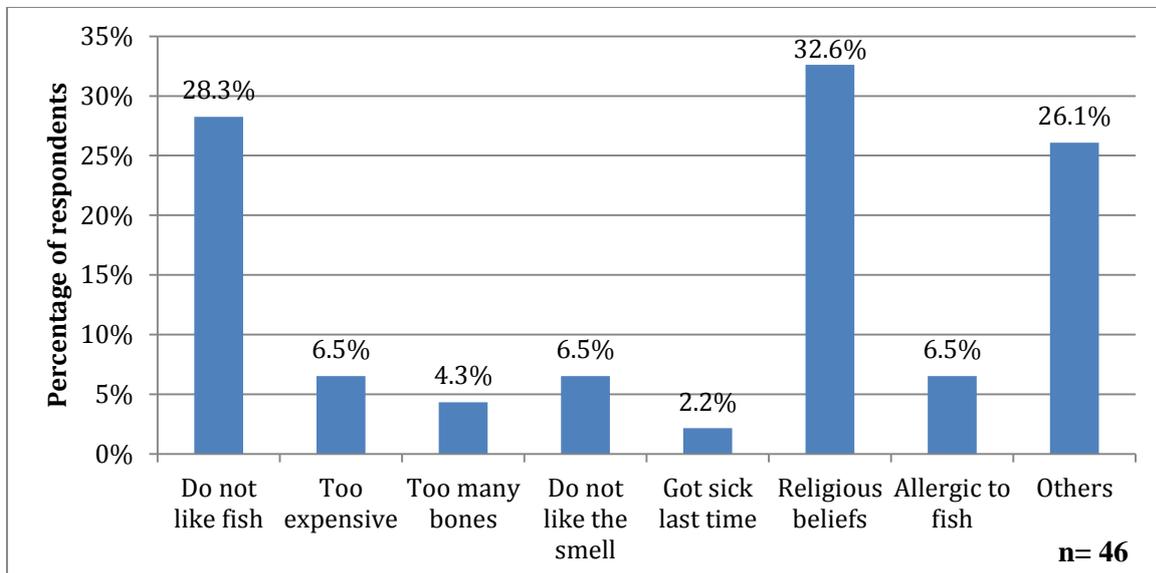
Figure 4 shows that 95 percent of the respondents (n=1000) buy or consume fish/fishery products.

**Figure 4: Fish purchase and consumption**



**Figure 5: Age grouping of fish consumers**

Out of 954 respondents, 23.8 percent were between 18 and 25 years old. However, a chi square test revealed that there is no significant relationship between fish consumers and age group ( $p>0.05$ ).

**Figure 6: Reasons for not consuming and purchasing fish**

Five per cent of the respondents do not consume fish or other fishery products (Figure 4) for various reasons. It would seem that religious belief is the most important reason for not eating fish (32.6 percent of the non-consumers) (Figure 6), followed by dislike of fish (28.3 percent). However, no firm conclusions can be deduced, as the population analysed is too small.

**Figure 7: Frequency of eating fresh or frozen fish (excluding other fishery products)**

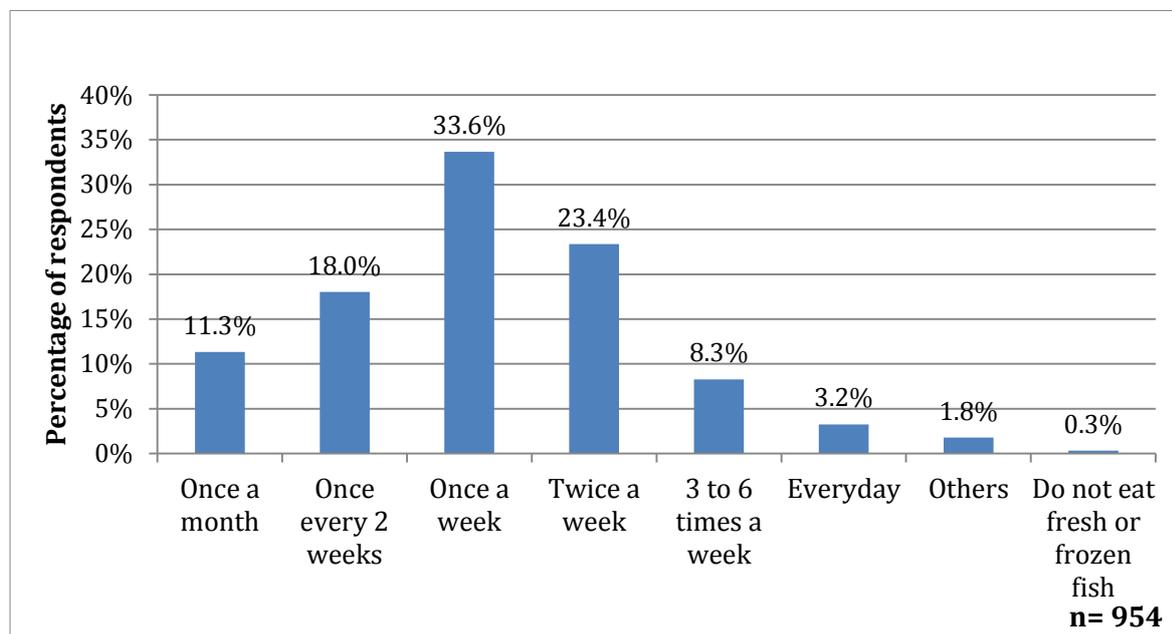


Figure 7 illustrates the frequency of consumption of fresh or frozen fish among the consumers (n=954). 33.6 percent of respondents eat fresh/frozen fish at least once per week, while only 3.2 percent consume fresh or frozen fish everyday. 0.3 percent of fish consumers claimed that they do not eat fresh or frozen fish, which may point to the consumption of canned or other fish products as outlined in Figure 7. It should also be noted that 29.8 percent of respondents consume fish products (excluding fresh and frozen) at least once a week and 16.9 percent of them eat fish products at least twice a week. 4.9 percent of them stated that they rarely consume fish products.

**Figure 8: Frequency of eating other fishery products (excluding fresh or frozen fish)**

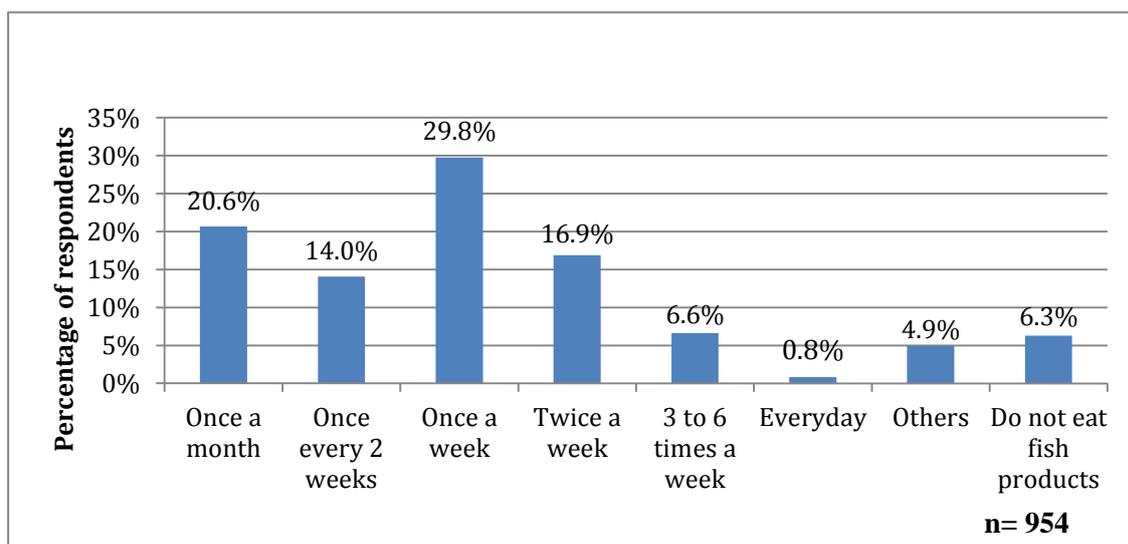


Figure 8 illustrates the frequency of consumption of fish products among the consumers (n=954). It shows that 29.8 percent of them consume fish products once per week and 6.3 percent of them do not eat fish products. 4.9 percent of them stated that they rarely consume fish products while some did not mention any reason for not consuming.

**Table 2: Amount of fish consumed (per kg) per household in a typical meal**

Amount of fish (Kg)	% of respondents (n= 908)
<b>Less than 1</b>	5.1
<b>1 - 2</b>	49.4
<b>2 - 3</b>	27.1
<b>3 - 4</b>	11.7
<b>More than 4</b>	6.7

From Table 2, it may be deduced that a high percentage of the consumers (54.5 percent) consume between 1 to 2 kg of fish during a typical family meal (n=954). However, more than 27.1 percent of consumers eat 2 to 3 kg of fish per meal, which may reflect a larger family.

**Per capita fish consumption based on data from the survey:**

Per capita fish consumption (including fresh, frozen & fishery products): 40 kg/year;

Per capita fresh and frozen fish consumption (excluding fishery products): 23.1 kg/year;

Per capita fish products consumption (excluding fresh and frozen fish): 16.8 kg/year.

Per capita fish consumption was calculated based on data collected during the survey. It was observed that per capita consumption of fresh and frozen fish stands at 23.1 kg/year, much higher than the per capita consumption of fishery products of 16.8 kg/year. This confirms the fact that Mauritians generally prefer fresh/frozen fish (Figure 12). It should be noted that non-consumers/vegetarians were excluded from the above calculations. Note that official figures from Statistics Mauritius indicated a per capita consumption of 21.7 kg/year in 2010 and 21 kg/year in 2011.

Some 46.1 percent of respondents prefer to buy their fish at the supermarket (Figure 9), which is a major shift from previous surveys. This is probably due to the accessibility of the product 60.5 percent (Figure 10). Other reasons noted were the good quality of fish and hygienic conditions observed at the supermarkets, which tended to favour these locations for the purchase of fish.

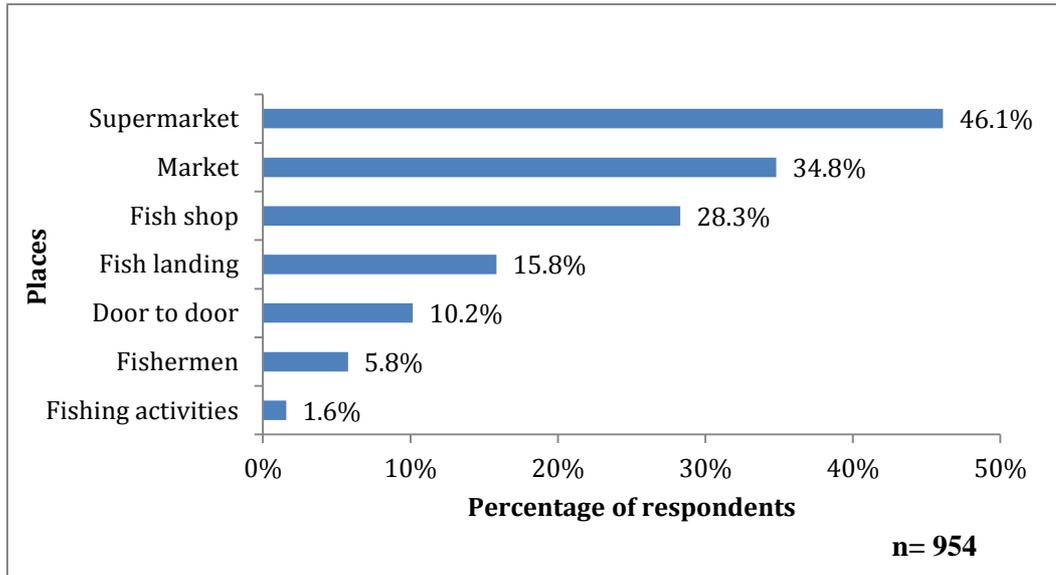
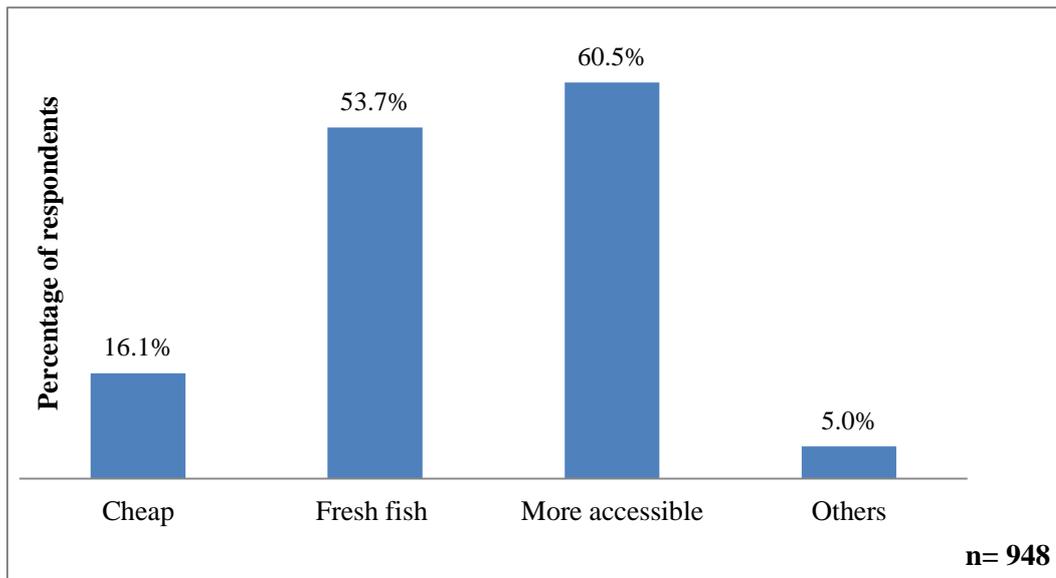
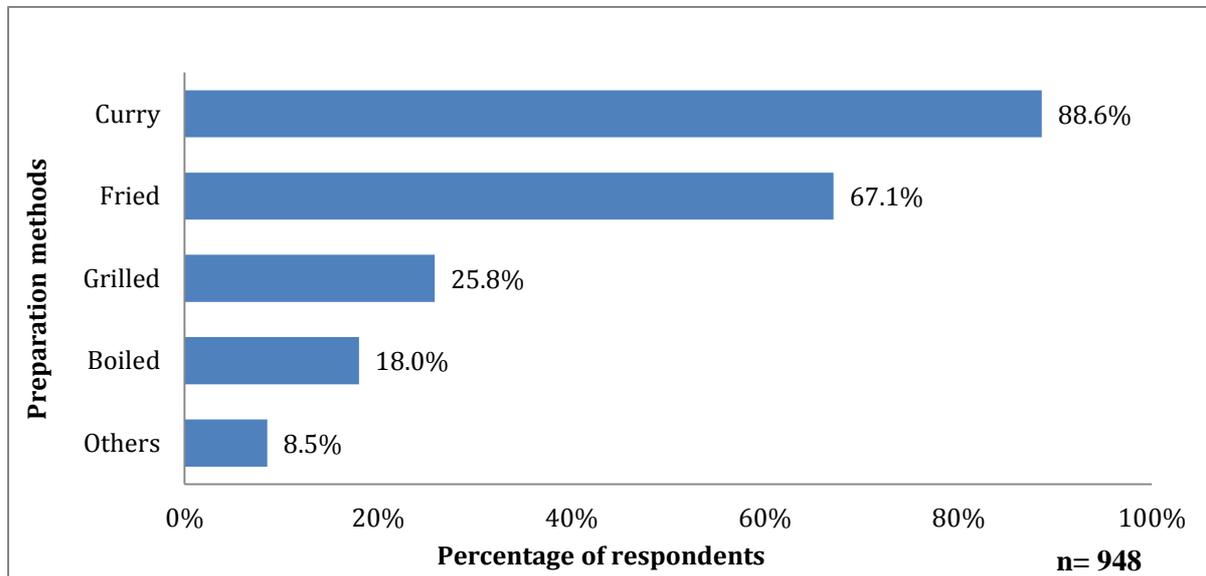
**Figure 9: Preferred places to purchase fish****Figure 10: Reasons for purchase of fish from preferred places**

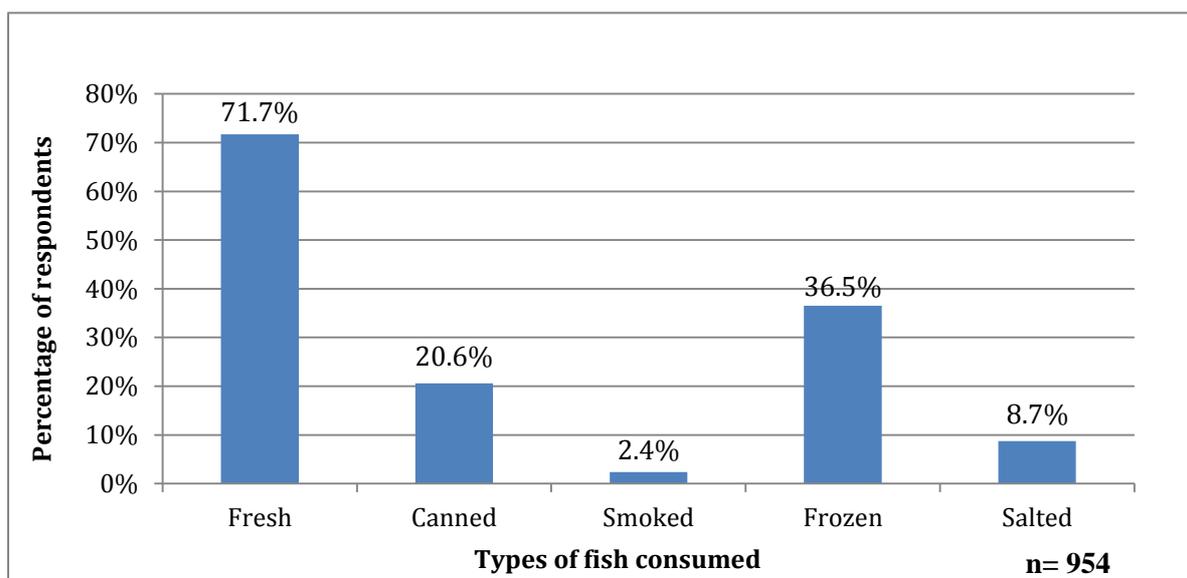
Figure 11 illustrates the preference of respondents with regards to culinary habits in Mauritius.

**Figure 11: Preferred fish preparation(s)**



88.6 percent of respondents showed a preference for fish curries and 67.1 percent preferred fried fish. It should be noted that many families prefer to half fry the fish prior to dipping the fish in a curry sauce. As expected from an island country, 71.7 percent of respondents (n=954) showed a preference for the consumption of fresh fish (Figure 12) followed by frozen fish, canned fish products and others.

**Figure 12: Consumption of fish and other fishery products**



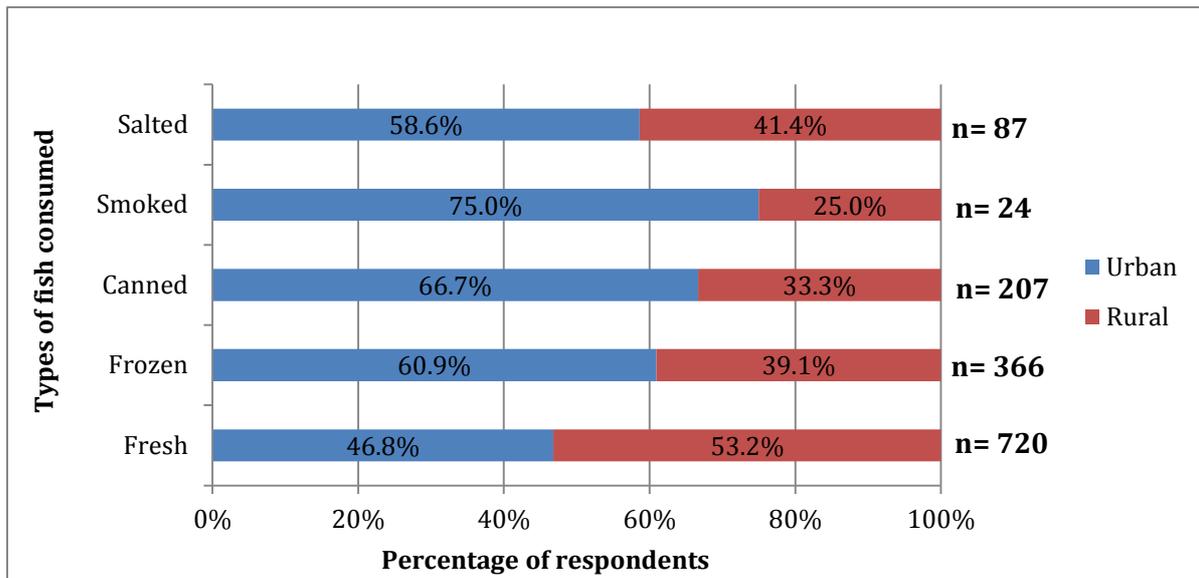
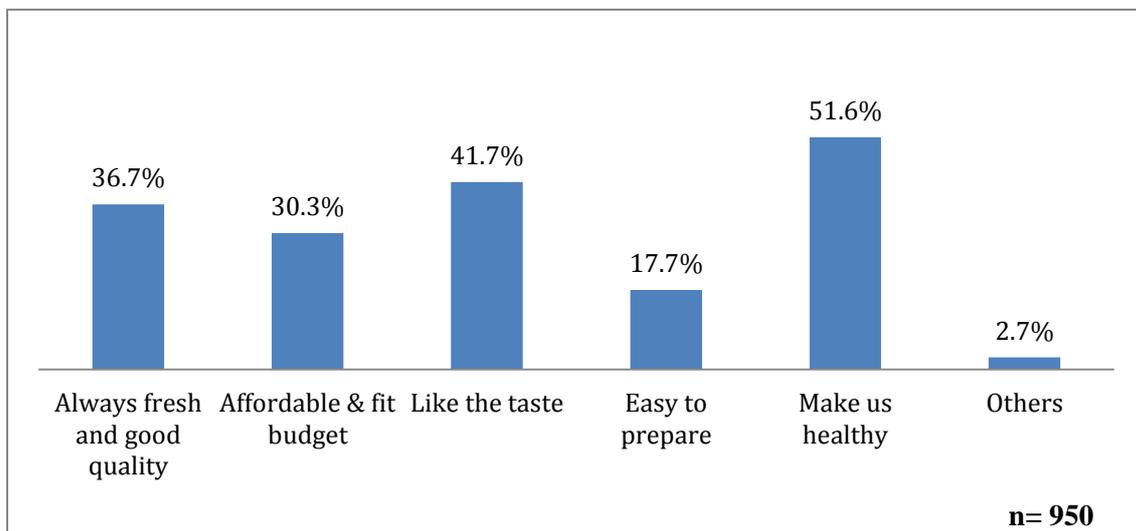
**Figure 13: Fish consumption from rural and urban regions**

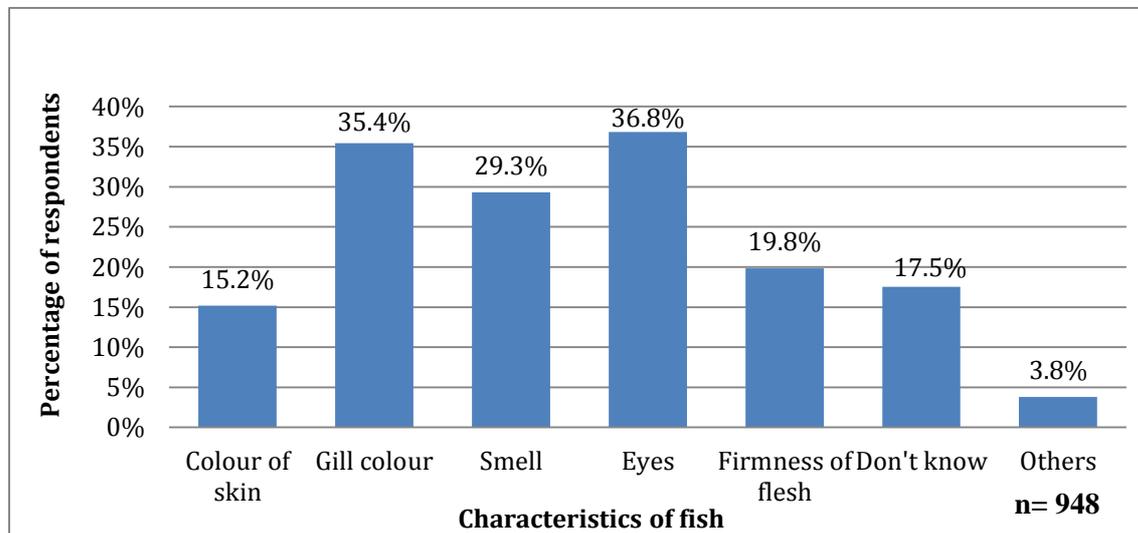
Figure 13 illustrates the various categories of fish consumed in rural and urban areas. A higher proportion of respondents from rural regions (53.2 percent) consumed more fresh fish compared to urban regions (46.8 percent). In contrast, respondents from urban regions consumed much more salted, smoked, canned and frozen fish. Note that most of the rural regions covered by this study are coastal areas where the availability of fresh fish is much higher.

**Figure 14: Factors affecting the purchase of fish and other fishery products**

Health awareness, quality and taste, seem to be the main criteria when deciding whether to purchase fish or other fishery products. 51.6 percent of respondents were more health conscious and purchased fish because of its nutritional benefits whilst 41.7 percent liked the taste. The quality and price of fish were also considered prior to purchase.

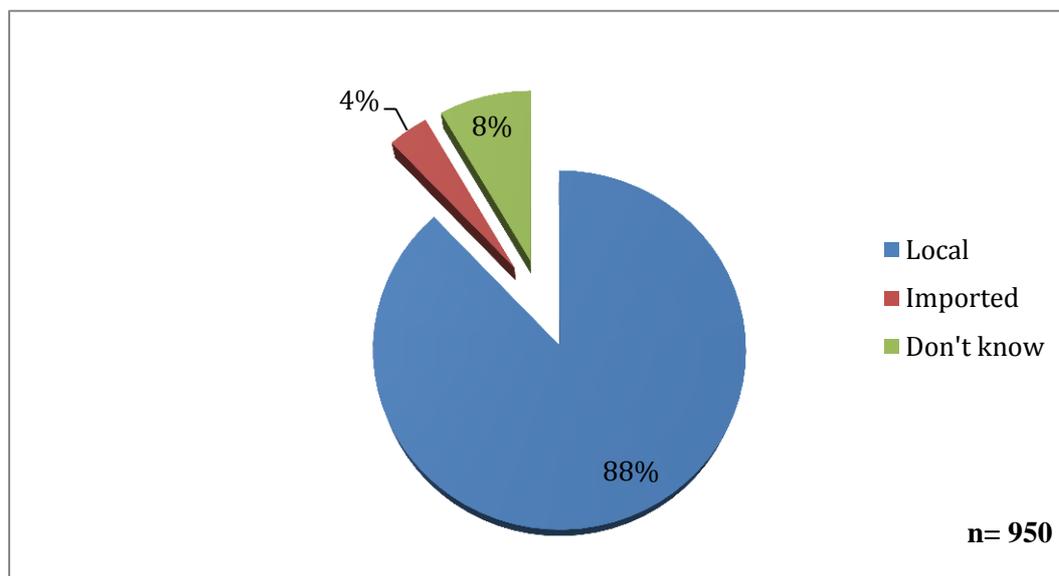
A small percentage of respondents (2.7 percent) purchased fish based on the preferences of their family members and on the type of dish to be prepared.

**Figure 15: Consumer perception with regards to quality**

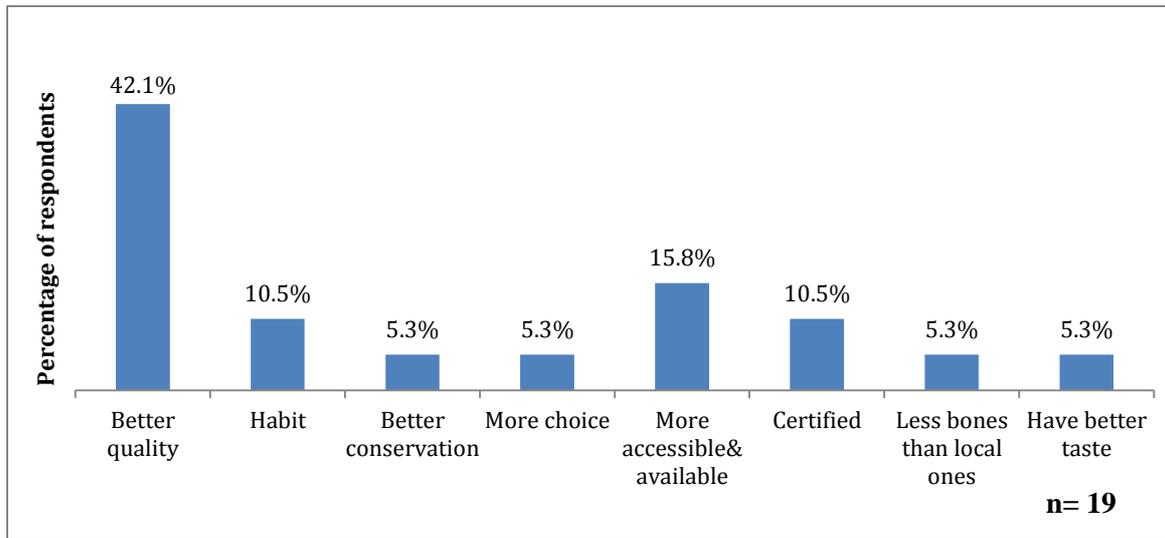


The majority of respondents judged the fish quality by close observation of the eyes, gill colour and the smell of the fish. Some of the respondents trusted the fishermen or fish seller as far as the quality of fish are concerned. Some 17.5 percent of respondents did not know the characteristics of a good quality fresh fish.

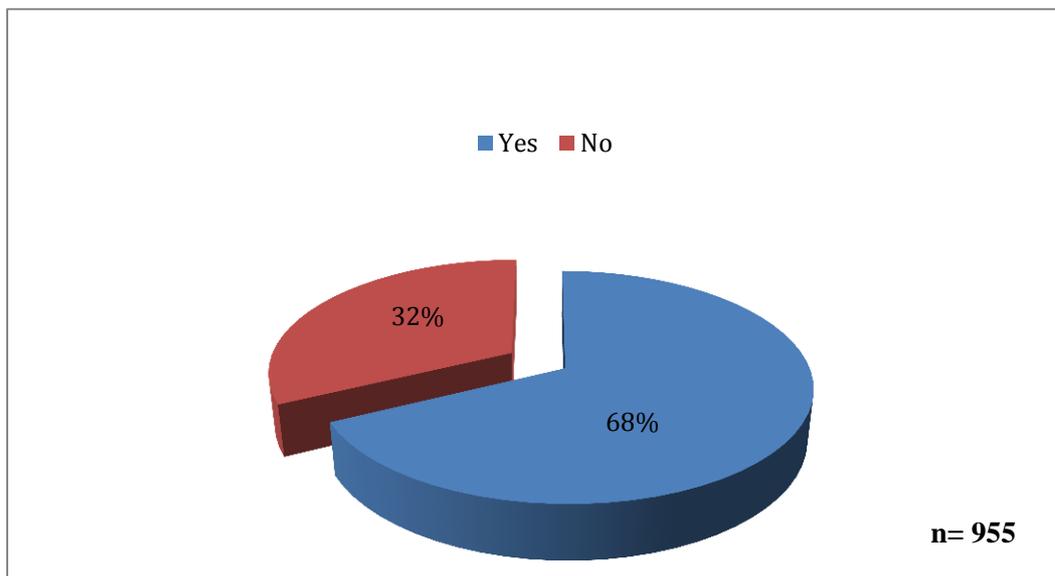
**Figure 16: Preference to local or imported fish**



Eighty eight per cent of the consumers (n= 950) preferred local fish to imported ones. However, 4 percent could not see a difference between local and imported fish (Figure 16). Those respondents purchasing imported fish perceived that the quality was much better and the fish was more readily available (Figure 17), however, this group was not statistically relevant.

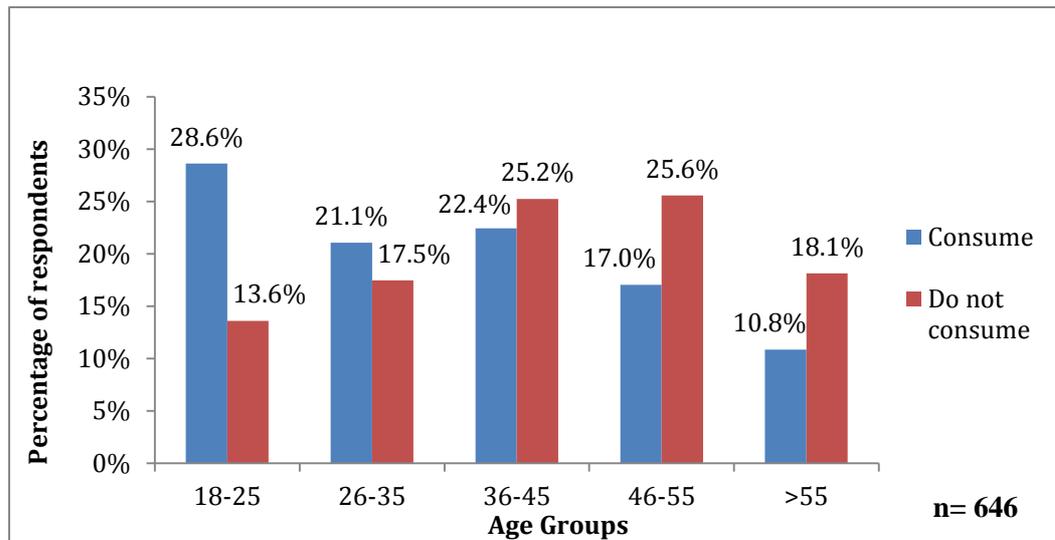
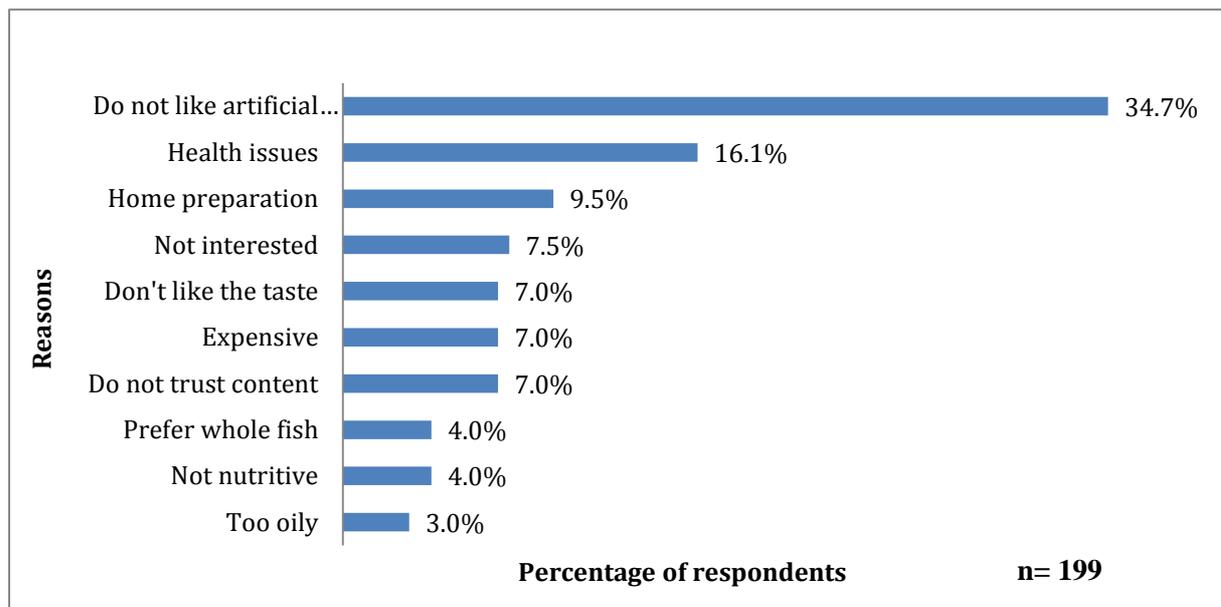
**Figure 17: Preference for imported fish why?**

Over the last few years snacking has grown into a major business where high turnovers are recorded annually. Fish snacks are diverse in nature and include samosa's, nems<sup>6</sup>, fish nuggets, fish balls, fish fingers, burgers and so on. It was not surprising to note that 68 percent of respondents purchased and consumed such snacks (Figure 18).

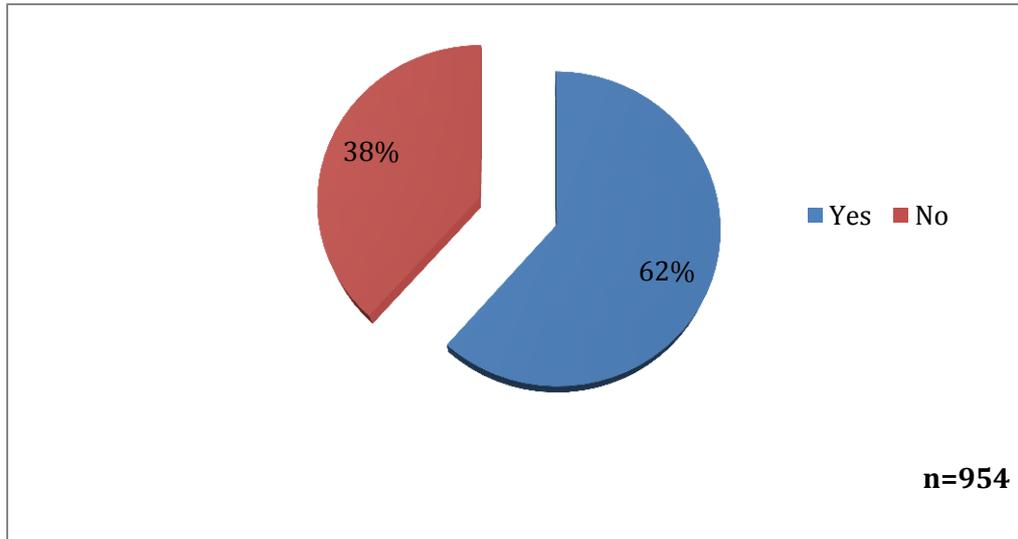
**Figure 18: Purchase of fish snacks**

The main consumers of fish snacks are aged between 18 and 45 years. A chi square test revealed that there was no significant relationship between the consumption of fish snacks and the age of the respondents.

<sup>6</sup> Samosa's and nems are snacks that can be made using fish.

**Figure 19: Age groups and consumption of fish snacks****Figure 20: Reasons for not consuming fish snacks**

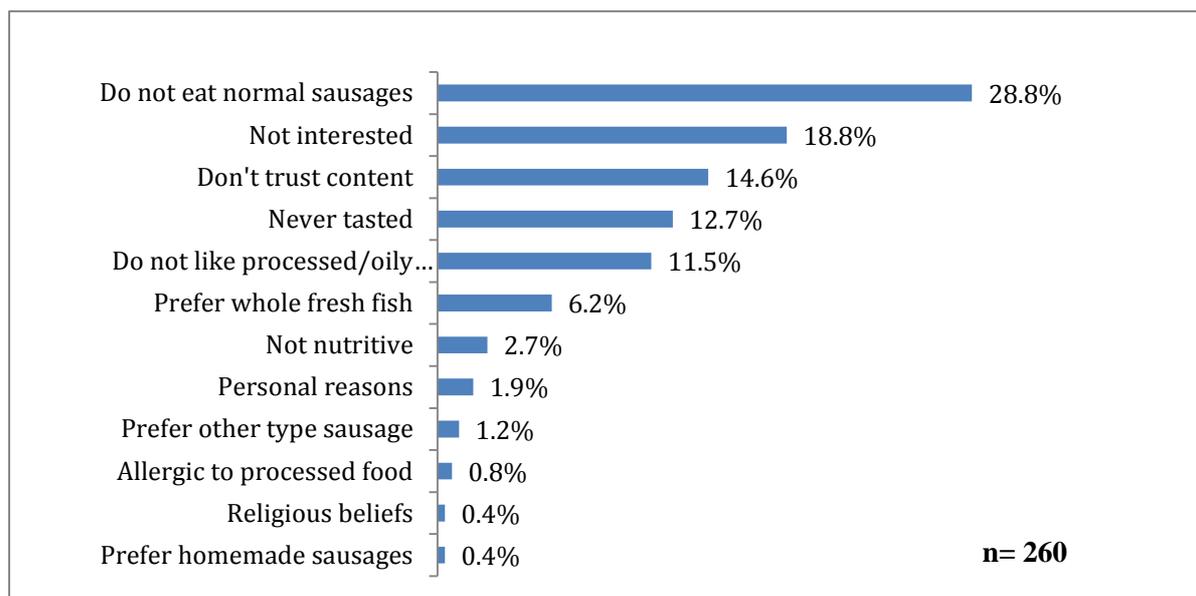
Various reasons for not consuming fish snacks were put forward. 34.7 percent did not like the artificial products that were used whilst a smaller percentage of respondents did not perceive fish snacks to be of good quality or beneficial to their health. Others preferred home made products.

**Figure 21: Interest in consuming fish sausages**

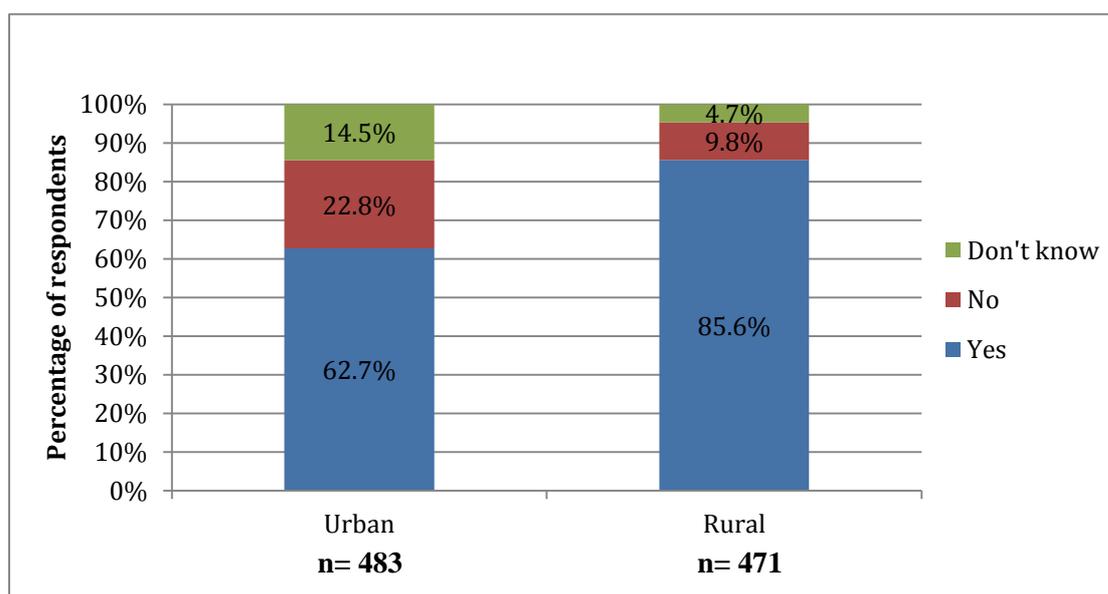
Presently there are no fish sausage manufacturers in Mauritius though it is evident that a local market exists for this product. 62 percent of fish consumers (n= 954) showed a keen interest in consuming fish sausages for various reasons illustrated in Table 3. A high percentage (86.2 percent) of them stated that they would like to taste this new product.

**Table 3: Interest in consuming fish sausages**

Reasons	Percentage of respondents (n= 497)
New product (to taste and try)	86.2
Preference for fish	3.4
Nutritional value	3.0
Alternative to other fish products	3.0
Availability	0.4
Ingredients to be included on labels	0.4
Quality & norms	0.2

**Figure 22: Reasons for not consuming fish sausages**

Twenty eight per cent of respondents did not consume any type of sausages whilst 14.6 percent appeared not to trust the contents/ingredients used. Some did not like processed products (11.5 percent), while others preferred to eat whole fresh fish (6.2 percent).

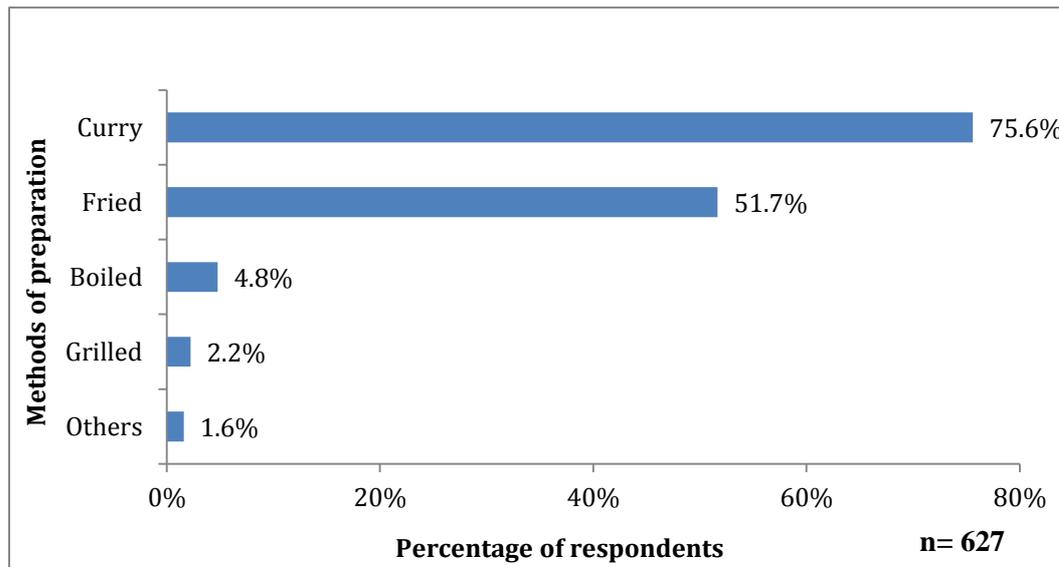
**Figure 23: Consumption of the Cordonnier fish in urban and rural regions**

It should be noted that a higher percentage of respondents (85.6 percent) from rural areas eat Cordonnier<sup>7</sup> fish compared to 62.7 percent from urban areas.

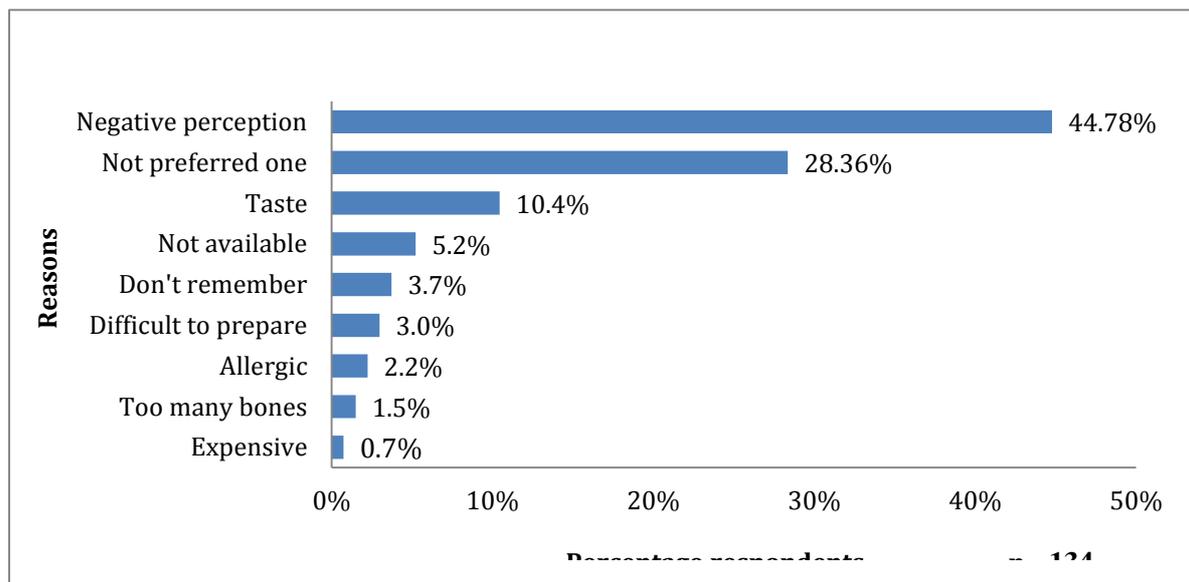
<sup>7</sup> Cordonnier (*Signanus sutor* or rabbit fish). See photo in Annex 5.

Better availability and probably lower price in the coastal regions<sup>8</sup> could account for the higher consumption of this species in the rural zones. Moreover, 22.8 percent of the respondents (n= 483) from urban regions stated that they have never eaten the 'Cordonnier' as compared to 9.8 percent of respondents (n= 471) from rural regions. It was also noted that Mauritians preferred to eat a fish curry (75.6 percent) or fried fish (51.7 percent) rather than other types of preparation (Figure 24).

**Figure 24: Culinary preference for the Cordonnier**



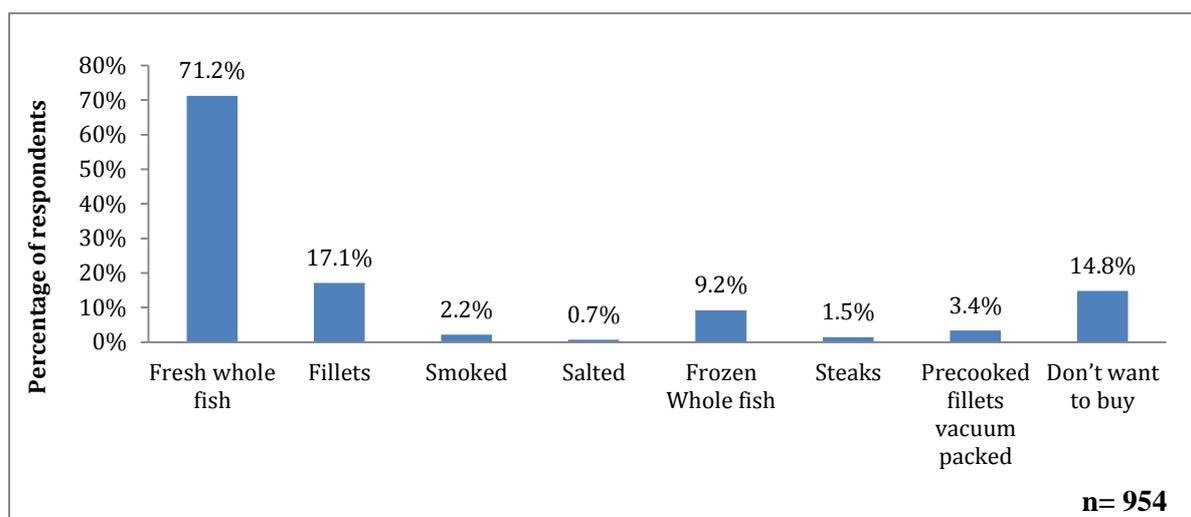
**Figure 25: Reasons for not consuming the Cordonnier**



<sup>8</sup> Most of the coastal regions are classed as rural areas.

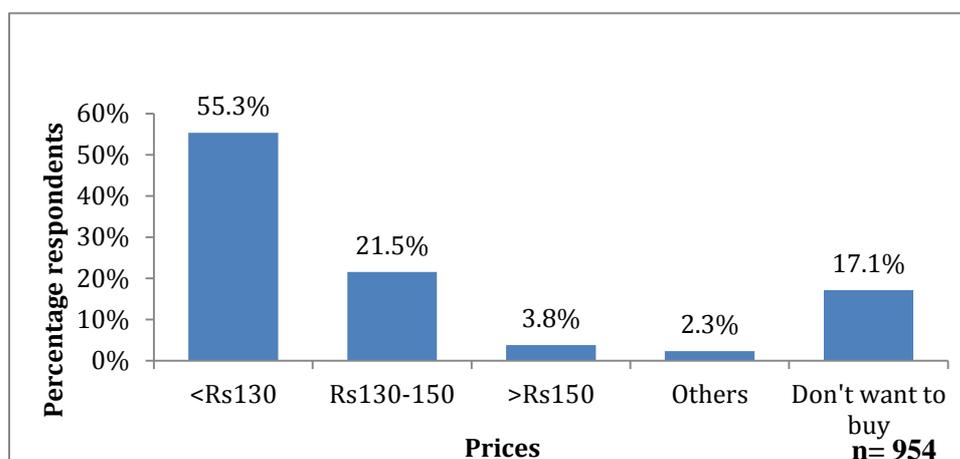
There seems to be a general perception that consumption of the rabbit fish causes an increase in hypertension (28.4 percent) or that it could cause nightmares and hallucinogenic reactions (14.2 percent). It should be noted that hallucinogenic fish poisoning is caused by eating the heads or body parts of certain species of herbivorous fish and has previously only been recorded in the Indo Pacific region (Clarke, 2006). There are no records of fatal cases with regards to the consumption of Cordonnier fish in Mauritius.<sup>9</sup> 28.36 percent of the respondents did not like eating Cordonnier for various reasons or did not like the taste (Figure 25).

**Figure 26: Purchasing habits for the Cordonnier**



Seventy one percent of respondents preferred to purchase whole fresh rabbit fish whilst 17.1 percent preferred to buy it as fillet. Some of the respondents (14.8 percent) prefer not to buy rabbit fish (Figure 26). It is worth noting that 55.3 percent of respondents were ready to pay slightly less than Rs.130 for a 300 gram vacuum packed fillet pack whilst 21.5 percent of respondent were willing to pay between Rs.130 and Rs.150 (Figure. 27).

**Figure 27: Price respondents willing to pay for a ready-to-eat vacuum packed Cordonnier (300g)**



<sup>9</sup> Personal communication

**Figure 28: Price respondents willing to pay for vacuum-packed Cordonnier fillets (300g)**

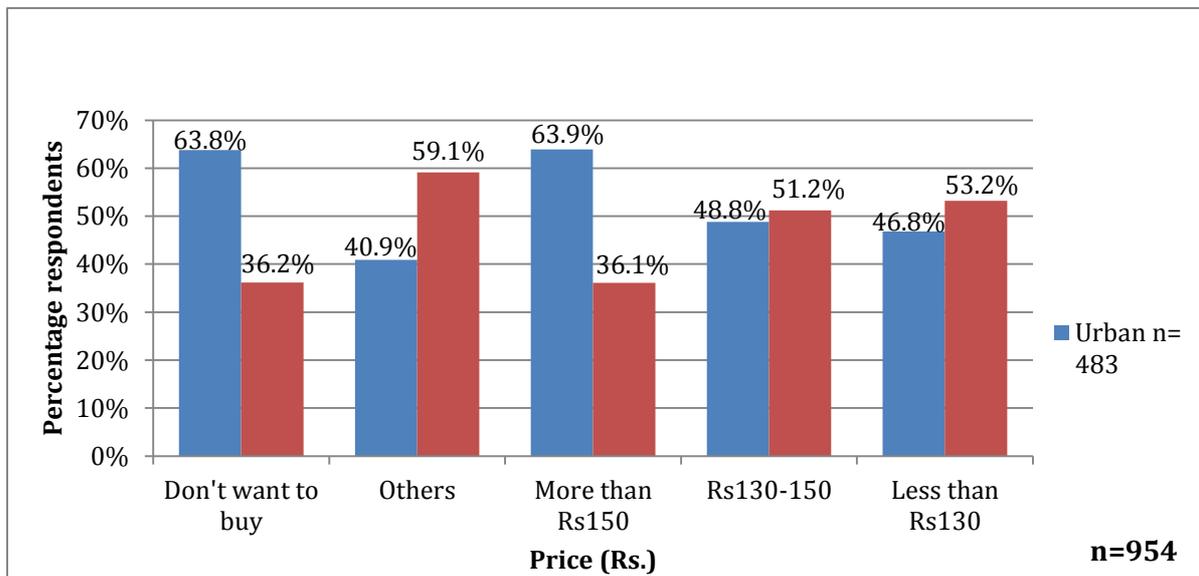


Figure 28 shows the different range of prices that respondents from urban regions (n=483) and rural regions (n=471) are willing to pay for a marinated Cordonnier vacuum-packed fillet of 300g. A high percentage (63.9 percent) of respondents from urban regions stated that they were ready to pay for more than Rs.150. 59.1 percent of respondents from rural regions (n=471) and 40.9 percent of respondents from urban regions (n=483) were willing to purchase the product if the price was less than Rs.130. Moreover, a chi square test revealed that there is a relationship between consumers from urban and rural regions and the price they are willing to pay for a ready-to-eat vacuum-packed Cordonnier ( $p < 0.05$ ).

### 3.2 Section B: Consumer knowledge of fish

Thirty eight percent of respondents identified Omega 3 as an essential fat whilst 31.8 percent did not know about Omega 3. There seems to be a general lack of awareness of the general public as to the benefits of Omega 3 & 6. This could form part of the Ministry of Fisheries awareness programmes to educate the public as to the benefits of Omega 3 & 6.

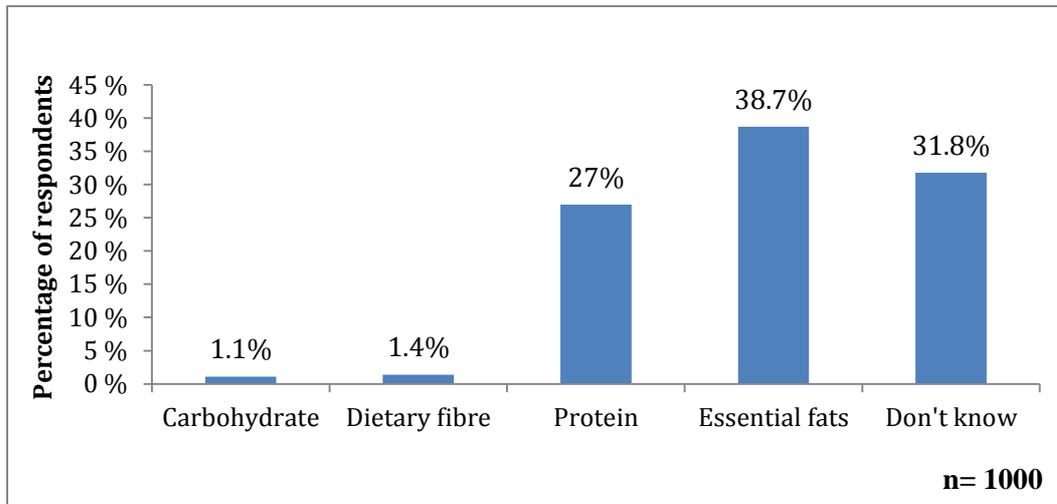
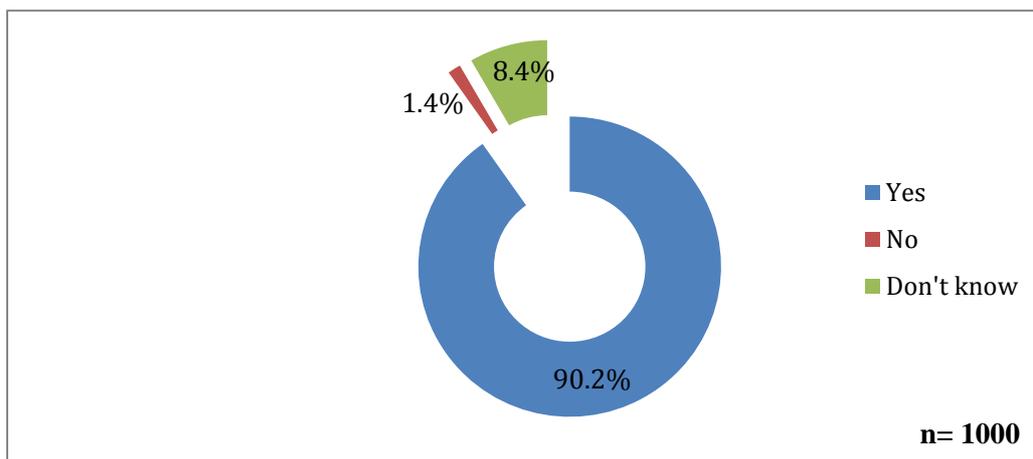
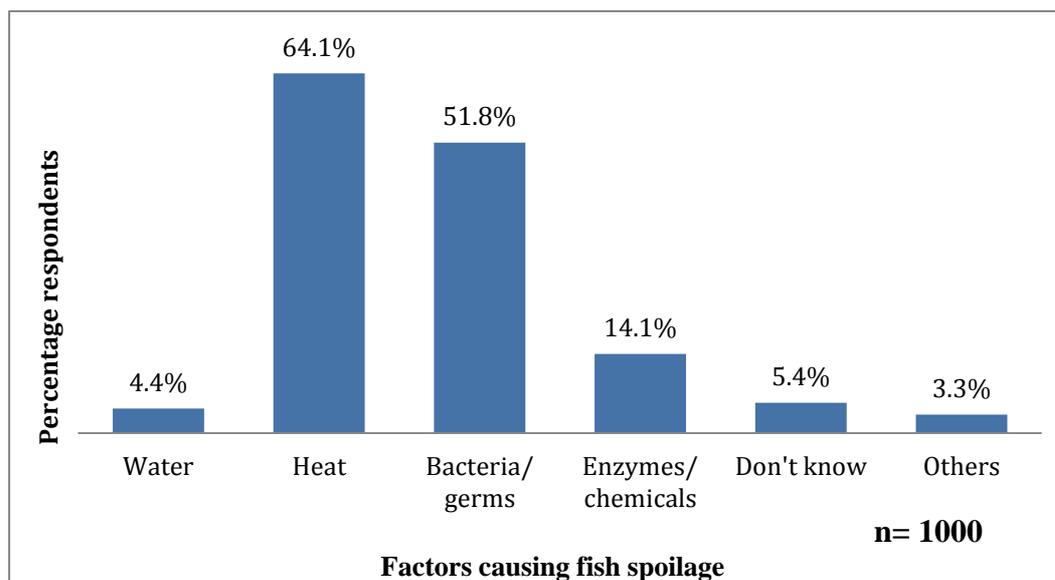
**Figure 29: Awareness of Omega 3****Figure 30: Fish consumption and a child's brain development**

Figure 30 shows that 90.2 percent of respondents (n= 1000) agreed on the positive impact of fish consumption for a child's brain development.

**Figure 31: Factors affecting fish spoilage**

Sixty-four and 51 percent of the respondents stated that heat and bacteria/germs respectively affect the quality of fish whilst 5.4 percent of respondents were not aware of the factors that spoil fish.

### 3.3 Section C: Consumer attitudes towards fish and other fishery products

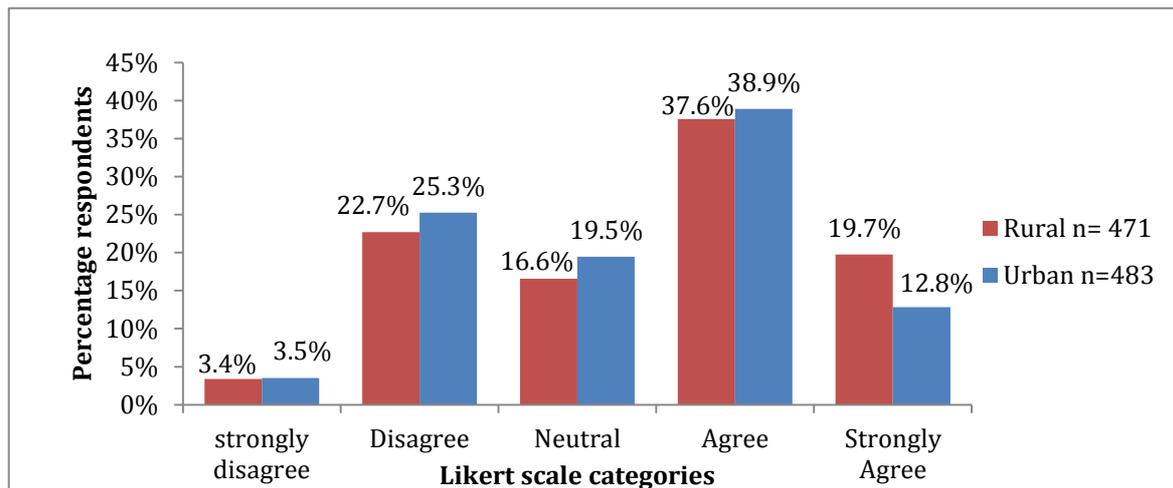
**Table 4: Likert scale categories for some attitude statements**

Attitude statements	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
<b>Eating fish is good for health</b>	0.4	0.1	2.3	37.2	60.0
<b>Fish is always available to buy</b>	3.5	24.0	18.0	38.3	16.2
<b>If fresh fish chilled, it will remain fresh for longer</b>	2.7	19.8	21.9	42.0	13.5
<b>The place where I buy fish is clean and makes me want to buy fish there again</b>	1.9	2.8	15.1	53.1	27.0
<b>Fish is cheaper than other protein/meats</b>	10.5	30.1	24.9	25.7	8.8

Results shown in Table 4 are self-explanatory. However it should be noted that the majority of respondents (97.2 percent) agreed with the attitude statement that eating fish is good for health.

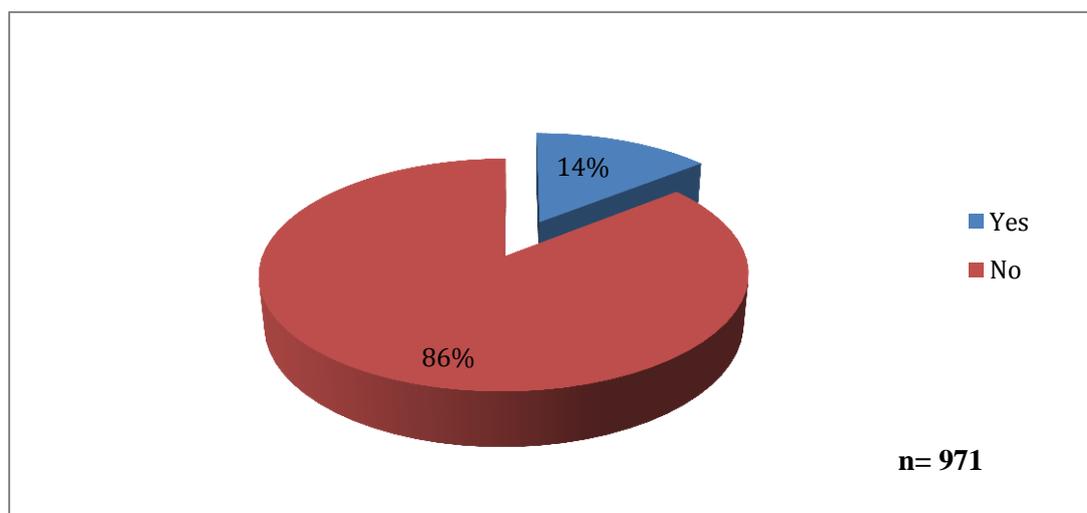
More than half (54.5 percent) agreed that fish is always available to buy and 55.5 percent were of the opinion that fresh fish will remain fresh for longer if it is chilled. Interestingly, some 40.6 percent of the respondents felt that fish was not cheaper than other proteins or meat while 24.9 percent were not able to provide an answer for this statement. The attitude statements seem to highlight that most of the people interviewed had a decent notion of quality.

**Figure 32: Likert scale categories for attitude statement on fish availability**



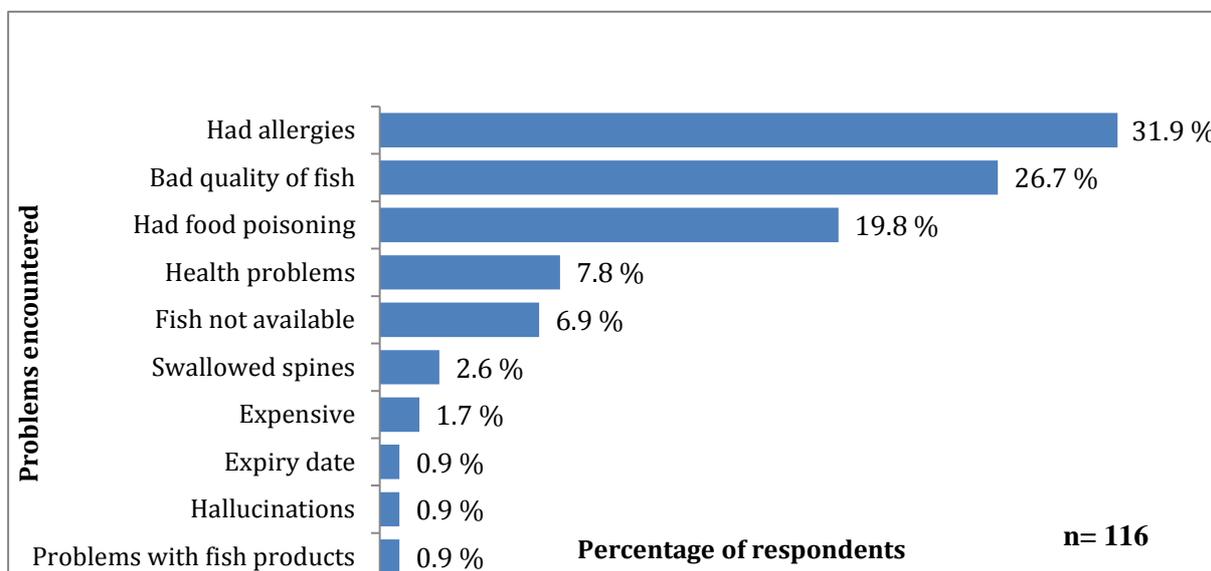
The Likert scale categories (Figure 32) illustrates that a higher percentage of respondents from rural areas (57.3 percent) agreed that fish is readily available for purchase compared to those from urban areas (41.7 percent). A chi square test however revealed no significant relationship between the availability of fish for purchase and the residential areas of the respondents ( $p > 0.05$ ).

**Figure 33: Problems encountered with the consumption of fish or other fishery products**



Eighty six per cent (fig 33) of respondents had never encountered any problems with the purchase and/or consumption of fish or other fishery products. However some 14 percent did encounter problems such as food poisoning, bad quality of the fish purchased or allergic reactions (fig 34).

**Figure 34: Problems encountered with fish and other fishery products**



**Table 5: Most effective mode for obtaining information about benefits and use of fish and other fishery products**

Communication methods	% respondents n= 937
<b>TV shows</b>	38.2
<b>Radio</b>	28.2
<b>Newspaper</b>	16.9
<b>Internet</b>	6.2
<b>Fishermen</b>	3.1
<b>People, relatives, family</b>	2.8
<b>Posters, magazines and flyers</b>	2.1
<b>Education</b>	0.6
<b>Conversation</b>	0.6
<b>Doctors/health centre/campaigns</b>	0.5
<b>Experience and habits</b>	0.4
<b>Sellers/fish shops</b>	0.3

Table 5 shows the most common methods of obtaining information about the benefits and use of fish and other fishery products according to respondents. The three main modes preferred by respondents are TV shows at 38.2 percent, radio at 28.2 percent and newspapers at 16.9 percent.

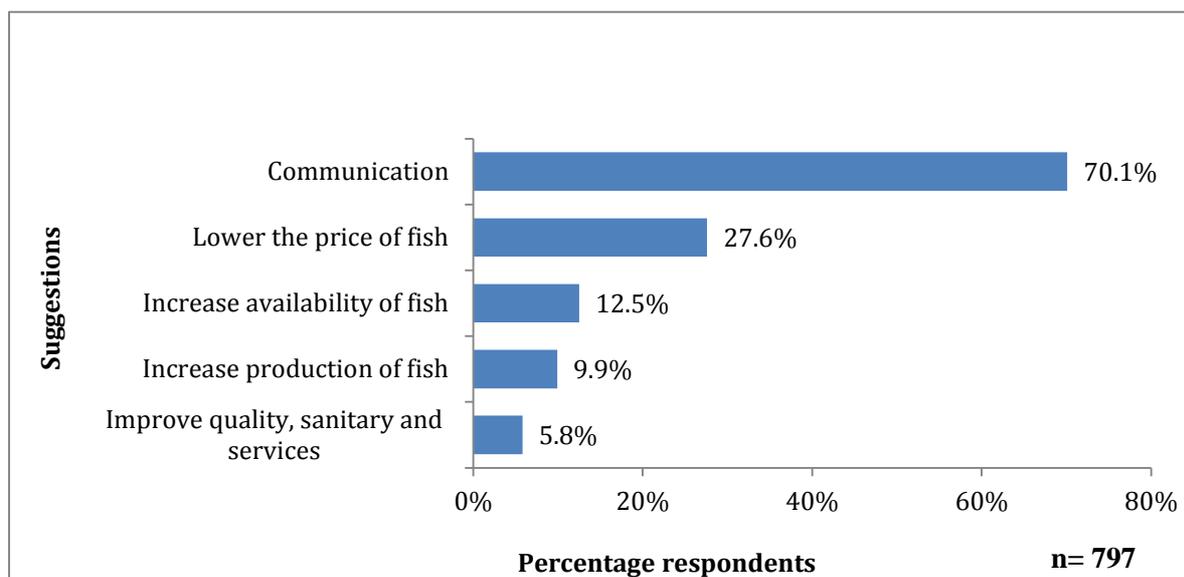
**Figure 35: Suggestions for the promotion of fish consumption**

Figure 35 shows the various suggestions from respondents as to how to promote fish consumption in Mauritius. 70.1 percent of the respondents proposed to have more information about fish through sensitisation campaigns and advertisements by different media while 27.6 percent suggested that the price of fish on the local market be reviewed so that it is affordable to all.

Interestingly, respondents have also suggested new product development, value addition and culinary promotions.<sup>10</sup>

<sup>10</sup> Refer to Annex B1, Section C, table: “How to promote consumption” for complete details

### 3.4 Section D: Consumer profiles

**Table 6: Details of consumers (n=1000)**

<b>Profiles</b>	<b>Labels</b>	<b>% respondents</b>
<b>Residential Area</b>	Urban	51.0
	Rural	49.0
<b>Gender</b>	Male	50.7
	Female	49.3
<b>Age group</b>	18-25	23.3
	26-35	20.1
	36-45	23.1
	46-55	19.5
	>55	14.0
<b>Educational level</b>	Primary	15.8
	Secondary	50.7
	Tertiary	31.4
	Vocational	1.1
	No schooling	1.0
<b>Occupation</b>	Working	69.7
	Not working	11.4
	Student	13.7
	Pensioner	5.2
<b>Range of household salary</b>	<Rs 5,000	1.9
	Rs 5,000 - 10,000	8.3
	Rs 11,000 - 15,000	8.7
	Rs 16,000 - 20,000	7.0
	Rs 21,000 - 25,000	11.1
	>Rs 25,000	24.2
	No reply	38.8

Figure 36 illustrates the distribution of respondents (n=1000) according to their age group for each residential region. 22.4 percent and 24.3 percent of the respondents from urban and rural regions respectively were aged between 18-25 years old.

**Figure 36: Age groups based on residential region**

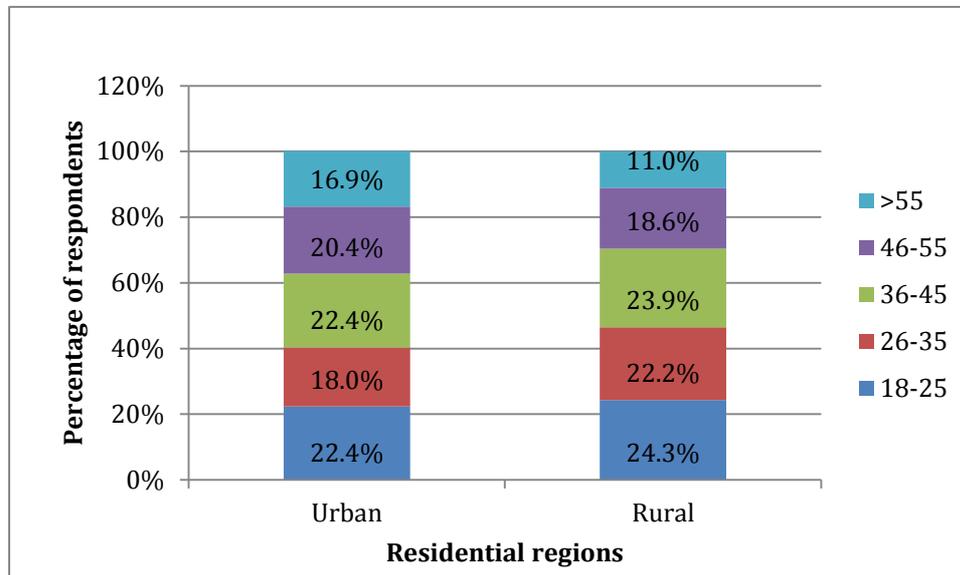
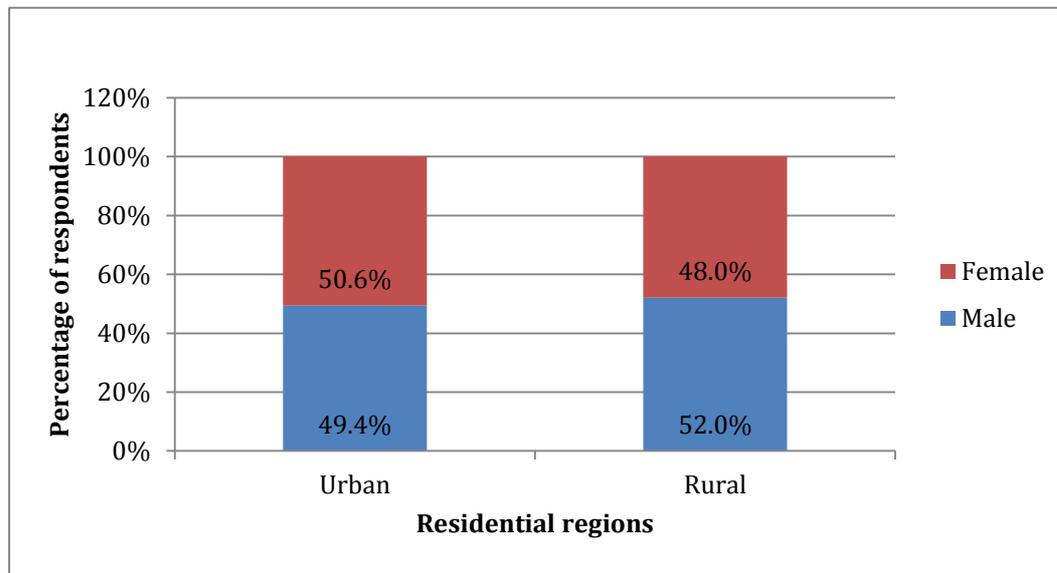


Figure 37 outlines the distribution of respondents (n=1000) according to their gender for each residential region.

**Figure 37: Gender based on residential region**



## 4. Discussion

### 4.1 Fish Consumption in Mauritius

This survey is probably the most comprehensive fish consumption survey that has been carried out for a long time. Baya (2013), and Kareemun (2013) carried out fish surveys at selected locations in Mauritius (BSc thesis). As part of their Household Survey, Statistics Mauritius request a minimum of details with regards to fish consumption. The official fish consumption level in Mauritius was 21.7 kg/year in 2010 and 21.0 kg/year in 2011.<sup>11</sup> However based on calculations from this survey, it was found that fish consumption among the sample of respondents is 40.0 kg/caput/year (excluding vegetarians and non-consumers). This is a more realistic figure although the survey targeted likely fish consumers rather than the general public at large. Further studies are recommended in order to gain more information about issues not covered in the present survey.

The present survey, carried out in November 2013, selected 21 sites to represent both urban and rural areas. The survey was carried out at supermarkets, markets, landing sites, fish shops, etc. It was found that the majority of respondents (95 percent) are buyers and consumers of fish and other fishery products. The consumption/purchase of fish and other fishery products among the respondents were well spread among throughout the different age groups with the highest percentage of fish consumption/purchase within the groups ranging between 18-45 years old. One of the main reasons for not buying and consuming fish or other fishery products was associated to religious beliefs (32.6 percent) and taste (28.3 percent).

Mauritians (33.6 percent) preferred to consume fresh or frozen fish at least once a week with a lower percentage (23.4 percent) consuming fresh/frozen fish twice a week. The frequency of fish consumption, despite the availability of other meat products, is a good indication of health awareness/benefits from consuming fish regularly by the population. It should be noted that as an island state, fish consumption is well established in Mauritius. Eating at least some fish per week tends to lower the Coronary Heart Disease (CHD) mortality rate when compared to those who do not eat any fish (Stone, 1994).

Consumers (46.1 percent) preferred to purchase fish at supermarkets.<sup>12</sup> This may be due to the fact that supermarkets are easily accessible for most consumers (60.5 percent). Over the last few years there has been a proliferation of supermarkets across the island. It should also be noted that the disappearance of door-to-door fish sellers and traditional Chinese shops in villages, coupled with the rise in purchasing power of Mauritians, nowadays tend to favour purchases from supermarkets.

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<sup>11</sup> Published by Statistics Mauritius

<sup>12</sup> Survey interviews took place outside several supermarkets.

With regards to culinary habits, most of the consumers (88.6 percent) prepare fish as curries. However, a high percentage (67.1 percent) also consumed fried fish, which is not a very good method of fish preparation. A past study (Nihn, 2011)<sup>13</sup> revealed that women who ate even one serving of fried fish during a week had a 48 percent higher risk of heart failure, compared to those consumers who rarely or never ate fish. It should be noted that there might be other variables not accounted for in the study linked with this statement. The survey also found that some 25.8 percent of respondents preferred grilled fish, which could be an alternative cooking method to be promoted among the public.

Respondents from rural areas had a higher preference for fresh fish. This may be due to the fact that the rural areas surveyed were mostly coastal, where consumers have easy access to fresh fish. Many rural consumers are themselves amateur fishers. Consumers from urban areas consumed much more frozen fish, which may be attributed to supermarkets selling frozen fish sometimes already cleaned and cut in pieces and also due to logistical problems bringing in fresh fish. An interesting fact to note is that 75 percent of the respondents (n=24) consuming smoked fish were from urban areas. Presently there are only a few smoked fish manufacturers in Mauritius. Though the size of the population analysed is small, it could be safely inferred that there may be a potential to further develop this type of product in Mauritius for a niche local market.

A fresh fish has clear bright eyes, bright red gills and moist/shiny skin. They also have a sea-fresh smell and firm flesh. A good percentage of respondents were aware of those characteristics while 17.5 percent of them could not distinguish good quality fresh fish. The study also revealed that 88 percent of respondents preferred local fish rather than imported ones and the reasons given by those preferring imported fish were because they perceived that imported fish were of better quality (42.1 percent).

Sixty eight per cent of respondents buy fish snacks such as fish balls and fish fingers, amongst others. This compares favourably with the study carried out in Seychelles (SFA, 2008). It was observed that a higher percentage of respondents (28.6 percent) consuming snacks were aged between 18 and 25 years. Food industries could consider developing marketing strategies to enhance consumption of fish snacks for this age group. It was also found that 34.7 percent of respondents did not like artificial products associated with fish snacks while some did not consume snacks due to health issues such as allergies (16.1 percent). However, if good cooking methods that can preserve the nutritional value of fish can be employed then fish snacks could be a viable means to promote fish consumption.

Promotion of fish consumption using the bycatch from tuna long liners could also be envisaged for the production of fish sausages. Presently there are no manufacturers of fish sausages in Mauritius though 62 percent of the respondents were interested to consume fish sausages, whilst 86.2 percent of the respondents were willing to taste such a product.

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<sup>13</sup> National Institute of Health and Nutrition

It was found that labelling of ingredients to show the nutritional value and content of fish sausages could enhance consumption. The manufacture of fish sausages could be envisaged in Mauritius.

## 4.2 Consumption of the Cordonnier (Rabbit fish)

The IOC FAO/SmartFish programme is assisting Mauritius by supporting the small-scale sector develop the cage culture of the 'Cordonnier' rabbit fish. This species are herbivorous and thus minimal cost is required for artificial pellet feed as they feed on algae from the lagoon. The IOC FAO/SmartFish Programme, in collaboration with the Fishermen Investment Trust (FIT), launched the aquaculture project by setting six grow-out cages at sea at Poste de Flacq and Quatre Soeurs. Fisher cooperatives are involved in the day-to-day management of the cages. Hence, the findings of the current study should further assess consumption habits and levels of this fish among consumers and look into the possibility of vertical integration of the project.

The study revealed that a high percentage (85.6 percent) of respondents from rural regions compared to 62.7 percent from urban regions have consumed rabbit fish. The lower consumption in urban areas may be due to the availability of fresh fish in towns. However, widening the availability and accessibility of this fish on the market could increase the consumption of rabbit fish.

Findings showed that a high percentage of consumers (75.6 percent) prepared the 'Cordonnier' as curry, followed by fried (51.7 percent) and boiled (4.8 percent). This finding is in line with overall preparation methods of fish whereby fish is mostly consumed as a curry in Mauritius. This could also imply that consumers are not aware of other culinary methods. Future awareness programmes should take this into account and show how the fish can be prepared in other ways.

Consumers gave several reasons for not eating rabbit fish and these are mainly associated with negative perceptions (44.78 percent) such as nightmares, hallucinations and hypertension. It should be noted that hallucinogenic fish poisoning is thought to be caused by eating the head or body parts of certain species of herbivorous fish and this has previously only been recorded in the Indo Pacific region, (Clarke, 2006). Ciguatera poisoning is associated with the consumption of reef fish that have fed on particular types of algae. There are however no records for ciguatera poisoning due to consumption of the 'Cordonnier' fish in Mauritius though consumption of the fish is perceived to cause nightmares.

Some respondents (28.36 percent) stated that they did not like the taste of the 'Cordonnier'. To further promote the consumption of this fish and for the success of the pilot project, awareness campaigns should focus on the nutritional value and alternative preparation and cooking techniques for this fish.

The majority (71.2 percent) of respondents preferred to buy fresh whole 'Cordonnier' while 17.1 percent prefer it as fillets and 9.2 percent as frozen. Lower responses were observed for precooked fillets of vacuum-packed (3.4 percent), smoked (2.2 percent) and salted (0.7 percent) 'Cordonnier'. This may be due to the fact that these types of products are currently available on the market. The production of vacuum-packed marinated/precooked fillets could enhance consumption of 'Cordonnier' in urban areas, which are the main focus of the project.

### **4.3 Consumer knowledge of fish**

Some respondents (38.7 percent) are aware of the health benefits of Omega 3 e.g. for the prevention of coronary heart disease. It was noted that quite a number of respondents either did not know or confused Omega 3 with protein (27 percent). Thus there is scope to reflect on the current state of consumer knowledge on the nutritional benefits of fish with a view to improving awareness.

Sixty-four percent of respondents agreed that heat is an important factor that may affect the quality of fish. Similarly, bacteria/germs (51.8 percent) are also essential factors that spoil fish according to respondents. It is known that bacteria due to high temperatures cause fish spoilage, especially fresh fish. Since Mauritius is a tropical island it is important that consumers are fully aware of the main factors of fish spoilage. This could also be part of an awareness campaign.

### **4.4 Consumer attitudes towards fish and other fishery products**

Ninety-seven percent of respondents totally agreed that fish is beneficial for health though they are not always aware as to why fish consumption is good. The availability of fresh fish might be lacking in urban areas especially in central regions due to higher logistical costs. However no relationship was found in a Chi-square test between regions and fish consumption (including fresh fish and other fishery products). 55.5 percent of the respondents agreed that fresh fish when chilled would keep for longer while 22.7 percent did not agree and 21.9 percent were found to be neutral, which might be an indication that 44.7 percent are not really sure about the importance of ice in preserving fish quality. This could be an issue to take into consideration to inform the population about the right way and methods of conserving fish quality and hence raise awareness about how to choose and buy good quality and properly handled fish.

The majority of respondents agreed (80.1 percent) that the cleanliness of the places where they buy fish would definitely affect their willingness to buy. Meanwhile, 40.6 percent of respondents (disagreed) did not find fish cheaper than meat. Again, this could be a question of availability and the marketing chain of fish.

The main food safety issues perceived by consumers are allergies (31.9 percent), bad quality fish (26.7 percent) and food poisoning (19.8 percent). These problems could be the result of improper handling, inappropriate conservation methods, poor sanitary conditions, or the consumption of spoilt fish or poor preparation and cooking at home. It should be noted that fish might also be contaminated by the environment before capture or as a result of feeding habits e.g. heavy metals, toxins, and this is independent of handling and hygiene issues.

The survey suggested that the best way to inform the population about consumption issues is were through TV shows (38.2 percent), radio (38.2 percent) and newspapers (16.9 percent). These were considered as the most effective way to disseminate information across the country.

#### **4.5 Consumption per capita**

The Ministry of Fisheries in collaboration with Statistics Mauritius found that Mauritians consume 21.7 kg of fish annually per caput (calculated on the total population).<sup>14</sup> However, these calculations do not take into account vegetarians and those people who do not like to consume fish for one reason or another.

The present study found a per capita fish and other fishery products consumption of 40.0 kg/year. These calculations excluded vegetarians and other non-consumers of fish and other fishery products. This is a much more realistic figure for the consumption of fish by consumers in Mauritius. The per capita consumption of fresh and frozen fish was found to be 23.1kg/year whilst the per capita consumption of fish products only was 16.8 kg/year.

One of the main constraints in carrying out the survey was the time factor of consumers. For future surveys this will need to be taken into consideration when designing the questionnaire. Interviews in future surveys need to be a maximum length of 7-8 minutes.

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<sup>14</sup> Ministry of Fisheries Annual Report, 2010.

## 5. Conclusions and recommendations

Per capita fish consumption in Mauritius, as found in this survey, is 40 kg per capita which is well above the world average of 17 kg/caput/year. Fish and other fishery products remain important sources of animal protein for the country.

However, the domestic production of fish and fishery products is not sufficient and the country has to import nearly 11,500 tonnes of fish and other fishery products from various countries per annum. The focus is currently on aquaculture as a mean to increase domestic fish production.

As an island country, Mauritians love to eat fish and culinary habits have not changed much over the years as shown in this report. Fish supply from local sources is an important component and additional research should be undertaken to determine current fish supplies and sources of variation in this supply.

Consumption avoidance, reflecting traditional and/or perceptions and beliefs could be addressed through targeted education programmes, starting at the community level. These programmes could emphasize the nutritional benefits of eating fish in particular and stimulate growth in the seafood sector. Perceptions relating to poor product quality could also be addressed by improving supply chain management and processing facilities, thus enhancing obvious economic and social benefits.

### 5.1 Recommendations

Based on the results of this study it is recommended that:

- Similar surveys are repeated regularly, for example at least once every three years, using the present study as a reference to monitor behavioural changes in fish consumption habits and perceptions of consumers;
- Awareness campaigns are carried out regularly and a culinary programme be developed in collaboration with the local TV station to promote and raise awareness on the health benefits of eating fish and alternative ways of cooking fish and other fishery products. Awareness on the proper handling and conservation of fish may also be necessary in the context of norms and standards (hygiene) to be kept prior to fish sales.
- A toxicity study on the cultured Cordonnier fish is undertaken. This may dispel many preconceived ideas. Such as study could also look into other health issues such as allergies.
- Fish be included in all food security policies/strategies and the commercial culture of the Cordonnier and other species be seriously promoted (funds to be made available by Government), both on a small scale and an industrial level, in line with the government concept of a blue Mauritius.

- The use of tuna by-catch and canning waste for human consumption through innovative product development be encouraged. This would definitely boost per capita consumption to avoid resorting to costly imports.

## 6. References

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## Annex 1. Terms of reference

### Terms of reference of the amendment:

#### Terms and conditions

##### 1. Work plan and timeframe

The timeframe for this agreement shall be from the date of signature of this agreement by both parties until 15 January 2014.

It is understood that unforeseen circumstances may affect the completion of this agreement. In such cases the duration and timing will be adjusted by mutual consent of the CVF and FAO, however the adjustment of any timing changes cannot go beyond 18 months of the date of signing the agreement.

##### 2. Changes in the activities planned and additional activities

The following activities have been included in the revised work plan:

#### **Activity 3.1 Assessment of consumer habits with regards to fish consumption**

##### *Indicators:*

- At least 500 stakeholders interviewed in 18 locations by 20 November 2013
- A national fish consumption survey report produced by 1st December 2013

Time and cost-related implications of the activities listed above are summarized in the revised work plan and budget annexed.

## Annex 2. Questionnaire

### Fishermen Investment Trust/IOC SmartFish/University of Mauritius

#### Fish consumption survey

Dear respondent,

On behalf of the Fishermen Investment Trust and the IOC SmartFish Programme, we would like to thank you for taking time to fill in this questionnaire. This survey is about buying and eating fish. Your contribution will help us understand more about fish consumers and fish consumption in Mauritius. Thank You.

Interview location type	Supermarket	Local market	Fish shop	Landing site
Location:			Date:	
Name of interviewer:				

Please select the option(s) that best indicate(s) your choice(s). More than 1 option is allowed.

#### **Section A: Fish consumption**

##### **A1. Do you or your household buy and eat fish and other fishery products?**

- Yes                       No

##### **If no, why not?**

- Do not like fish                       Too expensive                       Too many bones  
 Do not like the smell                       Got sick last time                       Religious reasons  
 Allergic to fish                       Do not know how to cook                       Other (specify).....

[If no, move on to complete knowledge (Section B), attitude questions (Section C) and consumer details (Section D) and then end the interview]

##### **A2. How often do you or your household eat fresh or frozen fish?**

- Once a month                       Once every 2 weeks                       Once a week  
 Twice a week                       3 to 6 times a week                       Everyday                       Other (specify)

##### **A3. How often do you or your household eat fish products fish (e.g. canned, dried)?**

- Once a month                       Once every 2 weeks                       Once a week  
 Twice a week                       3 to 6 times a week                       Everyday                       Other(specify)

**A4. How much fish do you or your family eat at a typical meal?\_\_\_\_\_ kg**

**A5. (i) Where do you normally buy fish?**

- Market                       Fish landing                       Fish Shop  
 Door to door seller    Supermarket                       Other (specify)

**(ii) Why do you buy from these places?**

- Cheap    Fresh fish available                       More accessible    Other (specify)

**A6. How do you normally prepare the fish & fishery products for eating?**

- Fried    Grilled    Boiled    Curry    Other (specify)

**A7. What types of fish do you consume more frequently?**

- Fresh fish    Canned fish    Smoked fish  
 Frozen fish    Salted fish

**A8. What are the factors that affect your purchase of fish or other fishery products?**

- Always fresh & good quality    Affordable & fits budget    Like the taste  
 Easy to prepare                       Is healthy for us    Other (specify)

**A9. How do you normally tell whether the fresh fish you buy is of good quality or not?**

- Colour of skin                       Gill colour    Smell    Eyes  
 Firmness of flesh    Don't know    Other (specify)

**A10. Do you prefer local or imported fish?**

- Local    Imported   If imported, why? .....   Don't know .....

**A11. Do you usually buy fish snacks (e.g., fish balls, samosa, etc.)?**

- Yes    No   If No, why?.....   If yes, state which ones .....

**A12. Would you be interested to eat fish sausages?**

- Yes   If yes, why?.....  
 No   If no, why not? .....

**A13. Have you ever eaten Cordonnier fish?**

- Yes    No    Don't know

If yes, how do you prepare it at home? .....

If no, why do you not eat it? .....

**A14. How would you prefer to purchase the Cordonnier?**

- Fresh whole fish    Fillets    Smoked    Salted  
 Frozen    Whole fish    Steaks    Precooked vacuum-packed fillets

**A15. How much would you be prepared to pay for a ready-to-eat vacuum-packed Cordonnier fillet (300g)?**

- < Rs. 130    Rs. 130-150    Rs. >150    Other (specify) .....

**Section B: Knowledge of fish****B1. Fish is a good source of Omega 3. What is Omega 3?**

- A. Carbohydrate    B. Dietary fibre  
 C. Protein    D. Essential fats    E. Don't know

**B2. Is eating fish good for a child's brain development?**

- Yes    No    Don't know

**B3. What makes fish spoil or go bad?**

- Water    Heat    Bacteria/ germs  
 Enzymes/ chemicals    Don't know    Other (specify) .....

**Section C: Consumer attitudes towards fish & fish products****C1. Please tick the box that best indicates your opinion of the following statements:**

Attitude statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Eating fish is good for your health					
Fish (any type) is always available					
If fresh fish is chilled then it will remain in good quality					
The place where I buy fish is clean and makes me want to buy fish there					
Fish is cheaper than other protein/meat					

**C2. Have you ever encountered any problem with fish or other fishery products?**

Yes       No      If yes, what type(s) of problem? .....

**C3. Which of the following activities do you find most effective in informing you about the benefits and use of fish and other fishery products? Please circle **ONLY ONE** option.**

A. Radio      B. Newspaper      C. TV shows      Other .....

**C4. What, in your opinion, can be done to promote the consumption of fish and other fishery products in Mauritius?****Section D: Consumer details**

**D1. Residential Area:**     Urban       Rural

**D2. Gender:**               Male       Female

**D3. Age group:**

18-25       26-35       36-45       46-55       > 55

**D4. What is your level of education?**

Primary       Secondary       Tertiary       Other (specify) .....

**D5. What is your occupation?**

Working       Not working       Student       Pensioner

**Please specify your profession:.....**

**D6. How many people are there in your household? .....****D7. Can you indicate your household income per month?**

Less than 5,000     Rs. 5,000 – 10,000     Rs. 10,000– 15,000

Rs. 15,000 – 20,000     Rs. 20,000 – 25,000     More than Rs. 25,000

Prefer not to answer

**D8. Name of respondent: .....**

**D9. Contact details: .....**

## Annex 2.1. Statistical outputs

### Section A: Fish consumption in Mauritius

Do you or your household buy and eat fish and other fishery products?					
		Frequency	%	Valid Per cent	Cumulative percentage
Valid	Yes	954	95.4	95.4	95.4
	No	46	4.6	4.6	100
	Total	1,000	100	100	

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	%	N	%	N	%
Do you or your household buy and eat fish and other fishery products? * Age group	1,000	100	0	0	1,000	100

Do you or your household buy and eat fish and other fishery products? * Age group cross tabulation								
			Age group (%)					Total
			18-25	26-35	36-45	46-55	>55	
Do you or your household buy and eat fish and other fishery products?	Yes	Count	227	190	222	189	126	954
		Do you or your household buy and eat fish and other fishery products?	23.8	19.9	23.3	19.8	13.2	100
		Percentage within age group	97.4	94.5	96.1	96.9	90	95.4
		Percentage of Total	22.7	19	22.2	18.9	12.6	95.4
	No	Count	6	11	9	6	14	46
		Do you or your household buy and eat fish and other fishery products?	13	23.9	19.6	13	30.4	100
		Percentage within age group	2.6	5.5	3.9	3.1	10	4.6
		Percentage of Total	.6	1.1	.9	.6	1.4	4.6
Total	Count	233	201	231	195	140	1,000	
	Do you or your household buy and eat fish and other fishery products?	23.3	20.1	23.1	19.5	14	100	
	Percentage within age group	100	100	100	100	100	100	
	Percentage of Total	23.3	20.1	23.1	19.5	14.0	100	

Case summary					
Valid		Missing		Total	
N	%	N	%	N	%
46	4.6	954	95.4	1000	100

Frequency: Reasons for not consuming fish				
		Response		% cases
		N	%	
Reasons	Do not like fish	13	25.0	28.3
	Too expensive	3	5.8	6.5
	Too many bones	2	3.8	4.3
	Do not like the smell	3	5.8	6.5
	Got sick last time	1	1.9	2.2
	Religious beliefs	15	28.8	32.6
	Allergic to fish	3	5.8	6.5
	Other	12	23.1	26.1
Total		52	100	113

Statistics		
Frequency of eating fresh fish or frozen fish		
N	Valid	954
	Missing	46

Frequency: Eating fresh or frozen fish					
		Frequency	%	Valid %	Cumulative %
Valid	Once a month	108	10.8	11.3	11.3
	Once every 2 weeks	172	17.2	18	29.4
	Once a week	321	32.1	33.6	63
	Twice a week	223	22.3	23.4	86.4
	3 to 6 times a week	79	7.9	8.3	94.7
	Everyday	31	3.1	3.2	97.9
	Others	17	1.7	1.8	99.7
	Do not eat (fresh or frozen fish)	3	.3	.3	100
	Total	954	95.4	100	
Missing	System	46	4.6		
Total		1000	100		

Statistics		
Frequency of eating fish products		
N	Valid	954
	Missing	46

Frequency: Eating fish products					
		Frequency	%	Valid %	Cumulative %
Valid	Once a month	197	19.7	20.6	20.6
	Once every 2 weeks	134	13.4	14	34.7
	Once a week	284	28.4	29.8	64.5
	Twice a week	161	16.1	16.9	81.3
	3 to 6 times a week	63	6.3	6.6	87.9
	Everyday	8	.8	.8	88.8
	Others	47	4.7	4.9	93.7
	Do not eat (fish products)	60	6	6.3	100
	Total	954	95.4	100	
Missing	System	46	4.6		
Total		1,000	100		

Statistics		
Amount of fish consumed per household in a typical meal		
N	Valid	908
	Missing	92

Amount of fish consumed per household in a typical meal					
		Frequency	%	Valid %	Cumulative %
Valid	<1kg	46	4.6	5.1	5.1
	1-2Kg	449	44.9	49.4	54.5
	2-3kg	246	24.6	27.1	81.6
	3-4kg	106	10.6	11.7	93.3
	>4kg	61	6.1	6.7	100
	Total	908	90.8	100	
Missing	System	92	9.2		
Total		1,000	100		

**Per capita fish consumption formula:**

(Mean) Household consumption (lbs) per meal = a

(Mean) Number of people in household consuming fish = b

Per capita consumption per meal = a/b

(Mean) Frequency of fish consumption per month = c

Monthly per capita consumption = a/b x c

**Annual per capita consumption = (a/b) x c x 12 months**

Per capita fresh/frozen fish consumption  (n = 954)	Annual per capita consumption = (a/b) x c x 12 months	0.61*6.32*12	46.29 lbs/year
	a/b= 0.61		2 lbs = 1 kg
	c for fresh & frozen = 6.32		46.29 lbs = 23.15 kg
			<b>23.15 kg/year</b>

Per capita fish products consumption  (n = 954)	Annual per capita consumption = (a/b) x c x 12 months	0.61*4.6*12	33.70lbs/year
	a/b= 0.61		2 lbs = 1 kg
	c for other fishery products = 4.6		33.70 lbs = 16.85 kg
			<b>16.85 kg/year</b>

**Total fish consumption= 23.15 + 16.85 = 40.0 kg per year or**

Per capita fish consumption  (n = 954)	Annual per capita consumption = (a/b) x c x 12 months	0.61*10.92*12	79.99 lbs/year
	a/b= 0.61		2 lbs = 1 kg
	c = 10.92		79.99 lbs = 40 kg
			<b>40 kg/year</b>

Case summary					
Valid		Missing		Total	
N	%	N	%	N	%
954	95.4	46	4.6	1,000	100

Frequency: Places to buy fish				
		Responses		% cases
		N	%	
Place where respondents normally buy fish	Market	332	24.4	34.8
	Fish landing	151	11.1	15.8
	Fish shop	270	19.9	28.3
	Door to door	97	7.1	10.2
	Supermarket	440	32.4	46.1
	Fishermen	55	4.0	5.8
	Fishing activities	15	1.1	1.6
	Total	1,360	100	142.6

Case summary					
Q A5.2 <sup>a</sup>	Valid	Missing		Total	
N	%	N	%	N	%
948	94.8	52	5.2	1,000	100

Reason for buying fish from preferred places				
		Responses		% cases
		N	%	
Why respondents bought fish there <sup>a</sup>	Cheap	153	11.9	16.1
	Fresh fish	509	39.7	53.7
	More accessible	574	44.7	60.5
	Others*	47	3.7	5.0
	1283	1,283	100	135.3

\*: good quality fish and hygienic conditions

Case summary					
Q A6 <sup>a</sup>	Valid	Missing		Total	
N	%	N	%	N	%
948	94.8	52	5.2	1,000	100

a: group

Frequency: Method of preparing fish				
		Responses		% cases
		N	%	
How fish and other fishery products prepared	Fried	636	32.2	67.1
	Grilled	245	12.4	25.8
	Boiled	171	8.7	18
	Curry	840	42.6	88.6
	Other*	81	4.1	8.5
	Total	1,973	100	208.1

\*: includes those who do not prepare fish themselves

Case summary					
Q A7 <sup>a</sup>	Valid	Missing		Total	
N	%	N	%	N	%
950	95	50	5	1,000	100

a: group

Frequency: Type of fish most consumed				
		Responses		% cases
		N	%	
Type of fish most consumed by respondent	Fried	720	51.3	75.8
	Canned	207	14.7	21.8
	Smoked	24	1.7	2.5
	Frozen	366	26.1	38.5
	Salted	87	6.2	9.2
	Total	1,404	100	147.8

		Residential Area					
		Urban		Rural		Total	
		Count	Row N %	Count	Row N %	Count	Row N%
I consume fresh fish more frequently	Fresh fish	337	46.8	383	53.2	720	100
	Canned fish	138	66.7	69	33.3	207	100
	Smoked fish	18	75	6	25	24	100
	Frozen fish	223	60.9	143	39.1	366	100
	Salted fish	51	58.6	36	41.4	87	100

Case summary					
Q A8 <sup>a</sup>	Valid	Missing		Total	
N	%	N	%	N	%
950	95	50	5	1,000	100

a: group

Frequency: Factors affecting purchase of fish and other fishery products				
		Responses		% cases
		N	%	
Factors affecting purchase of fish and other fishery products <sup>a</sup>	Always fresh and good quality	349	20.3	36.7
	Affordable & fit budget	288	16.8	30.3
	Like the taste	396	23.1	41.7
	Easy to prepare	168	9.8	17.7
	Make us healthy	490	28.5	51.6
	Other	26	1.5	2.7
Total		1,717	100	180.7

a: group

Case summary					
Q A9 <sup>a</sup>	Valid	Missing		Total	
N	%	N	%	N	%
948	94.8	52	5.2	1,000	100

a: group

Fish quality				
		Responses		% cases
		N	%	
How respondents determine fish quality	Colour of skin	144	9.6	15.2
	Gill colour	336	22.4	35.4
	Smell	278	18.6	29.3
	Eyes	349	23.3	36.8
	Firmness of flesh	188	12.6	19.8
	Don't know	166	11.1	17.5
	Others*	36	2.4	3.8
	Total	1,497	100	157.9

a: group

\* includes if labelled will verify expiry date, ask sellers and verify environmental conditions

Statistics		
Preference for local or imported fish		
N	Valid	950
	Missing	50

Preference for local or imported fish					
		Frequency	%	Valid %	Cumulative %
Valid	Local	836	83.6	88	88
	Imported	35	3.5	3.7	91.7
	Don't know	79	7.9	8.3	100
	Total	950	95	100	
Missing	System	50	5		
Total		1,000	100		

Statistics		
If imported fish - why?		
N	Valid	19
	Missing	9981

If imported fish - why?					
		Frequency	%	Valid %	Cumulative %
Valid	Better quality	8	.8	42.1	42.1
	Habit	2	.2	10.5	52.6
	Better conservation	1	.1	5.3	57.9
	More choice	1	.1	5.3	63.2
	More accessible and available	3	.3	15.8	78.9
	Certified	2	.2	10.5	89.5
	Local one too many bones	1	.1	5.3	94.7
	Taste better	1	.1	5.3	100
	Total	19	1.9	100	
Missing	System	981	98.1		
Total		1,000	100		

Statistics		
Purchase of fish snacks		
N	Valid	955
	Missing	45

Frequency: Purchase of fish snacks					
		Frequency	%	Valid %	Cumulative %
Valid	Yes	646	64.6	67.6	67.6
	No	309	30.9	32.4	100
	Total	955	95.5	100	
Missing	System	45	4.5		
Total		1,000	100	100	

Do you usually buy fish snacks? * Age group cross tabulation									
			Age group (%)					Total	
			18-25	26-35	36-45	46-55	>55		
Do you usually buy fish snacks?	Yes	Count	185	136	145	110	70	646	
		Do you usually buy fish snacks?	28.6	21.1	22.4	17	10.8	100	
		Age group	81.5	71.6	65	58.2	55.6	67.6	
		Percentage of total	19.4	14.2	15.2	11.5	7.3	67.6	
	No	Count	42	54	78	79	56	309	
		Do you usually buy fish snacks?	13.6	17.5	25.2	25.6	18.1	100.0	
		Age group	18.5	28.4	35	41.8	44.4	32.4	
		Percentage of total	4.4	5.7	8.2	8.3	5.9	32.4	
	Total		Count	227	190	223	189	126	955
			Do you usually buy fish snacks?	23.8	19.9	23.4	19.8	13.2	100
			Age group	100	100	100	100	100	100
			Percentage of total	23.8	19.9	23.4	19.8	13.2	100

Statistics		
Do not eat fish snacks		
N	Valid	199
	Missing	801

Frequency: Reasons for not eating fish snacks					
		Frequency	%	Valid %	Cumulative %
Valid	Do not like artificial products	69	6.9	34.7	34.7
	Health issues	32	3.2	16.1	50.8
	Not nutritive	8	.8	4	54.8
	Do not trust content	14	1.4	7	61.8
	Home preparation	19	1.9	9.5	71.4
	Expensive	14	1.4	7	78.4
	Prefer whole/fresh	8	.8	4	82.4
	Too oily	6	.6	3	85.4
	Don't like the taste	14	1.4	7	92.5
	Not interested	15	1.5	7.5	100
	Total	199	19.9	100	
Missing	System	801	80.1		
Total		1,000	1000		

Chi-Square Tests – Fish snacks and age group			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.06 <sup>a</sup>	4	.000
Likelihood ratio	39.43	4	.000
Linear-by-linear association	36.78	1	.000
No. of valid cases	955		
a. 0 cells (.0 percent) have expected count less than 5. The minimum expected count is 40.77.			

Statistics		
Would you like to eat fish sausages?		
N	Valid	954
	Missing	46

Would you like to eat fish sausages?					
		Frequency	%	Valid %	Cumulative %
Valid	Yes	587	58.7	61.5	61.5
	No	367	36.7	38.5	100
	Total	954	95.4	100	
Missing	System	46	4.6		
Total		1,000	100		

Statistics		
Why would you like to eat fish sausages?		
N	Valid	497
	Missing	503

Frequency: Why would you like to eat fish sausages?					
		Frequency	%	Valid %	Cumulative %
Valid	New product	428	42.8	86.2	86.2
	Easy to prepare	17	1.7	3.4	89.6
	Preference for fish	17	1.7	3.4	93
	Nutritional value	15	1.5	3	96
	Alternative to other fish products	15	1.5	3	99
	Availability	2	.2	.4	99.4
	Ingredients to be included on labels	2	.2	.4	99.8
	Quality and norms	1	.1	.2	100
	Total	497	49.7	100	
Missing	System	503	50.3		
Total		1,000	100		

Statistics		
Why would you not eat fish sausages?		
N	Valid	260
	Missing	740

Frequency: Reasons for not eating fish sausages					
		Frequency	%	Valid %	Cumulative %
Valid	Do not like processed/oily products	30	3	11.5	11.5
	Do not eat normal sausages	75	7.5	28.8	40.4
	Do not trust content	38	3.8	14.6	55
	Prefer whole/fresh	16	1.6	6.2	61.2
	Not interested	49	4.9	18.8	80
	Not nutritional	7	.7	2.7	82.7
	Never tasted	33	3.3	12.7	95.4
	Allergic to processed foods	5	.5	1.9	97.3
	Prefer other sausages	2	.2	.8	98.1
	Religious reasons	3	.3	1.2	99.2
	Prefer to make myself	1	.1	.4	99.6
	Total	260	26	100	
Missing	System	740	74		
Total		1,000	1000		

Statistics		
Consumption of Cordonnier fish		
N	Valid	954
	Missing	46

Consumption of Cordonnier fish					
		Frequency	%	Valid %	Cumulative %
Valid	Yes	706	70.6	74	74
	No	156	15.6	16.4	90.4
	Don't know	92	9.2	9.6	100
	Total	954	95.4	100	
Missing	System	46	4.6		
Total		1,000	100		

<b>Chi-Square Tests – Consumption of Cordonnier and residential area</b>			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	65.32 <sup>a</sup>	2	.000
Likelihood ratio	67.43	2	.000
Linear-by-linear association	60.14	1	.000
No. of valid cases	954		

a. 0 cells (.0 percent) have expected count less than 5. The minimum expected count is 45.42

<b>Do you usually buy fish snacks? * Age group cross tabulation</b>								
			Residential area					Total
			18-25	26-35	Urban	Rural	>55	
Have you ever eaten Cordonnier?	Yes	Count	185	136	145	110	70	646
		Do you usually buy fish snacks?	28.6	21.1	22.4	17	10.8	100
		Age group	81.5	71.6	65	58.2	55.6	67.6
		Percentage of total	19.4	14.2	15.2	11.5	7.3	67.6
	No	Count	42	54	78	79	56	309
		Do you usually buy fish snacks?	13.6	17.5	25.2	25.6	18.1	100.0
		Age group	18.5	28.4	35	41.8	44.4	32.4
		Percentage of total	4.4	5.7	8.2	8.3	5.9	32.4
Total		Count	227	190	223	189	126	955
		Do you usually buy fish snacks?	23.8	19.9	23.4	19.8	13.2	100
		Age group	100	100	100	100	100	100
		Percentage of total	23.8	19.9	23.4	19.8	13.2	100

Consumption of Cordonnier * Residential Area Cross tabulation					
			Residential area (%)		
			Urban	Rural	Total
Have you ever eaten the "Cordonnier"?	Yes	Count	303	403	706
		Have you ever eaten Cordonnier?	42.9	57.1	100
		Within residential area	62.7	85.6	74
		Percentage of Total	31.8	42.2	74
	No	Count	110	46	156
		Have you ever eaten Cordonnier?	70.5	29.5	100
		Within residential area	22.8	9.8	16.4
		Percentage of Total	11.5	4.8	16.4
	Don't know	Count	70	22	92
		Have you ever eaten Cordonnier?	76.1	23.9	100
		Within Residential Area	14.5	4.7	9.6
		Percentage of Total	7.3	2.3	9.6
Total	Count	483	471	954	
	Have you ever eaten Cordonnier?	50.6	49.4	100	
	Within residential Area	100	100	100	
	Percentage of Total	50.6	49.4	100	

Case summary					
Q A13.2 <sup>a</sup>	Valid	Missing		Total	
N	%	N	%	N	%
627	62.7	373	37.3	1,000	100

Frequency: Number of respondents who prepare Cordonnier				
		Responses		% cases
		N	%	
How many respondents normally prepare Cordonnier	Fried	324	38	51.7
	Grilled	14	1.6	2.2
	Boiled	30	3.5	4.8
	Curry	474	55.6	75.6
	Other*	10	1.2	1.6
	Total	852	100	135.9

Statistics		
Reasons for not consuming Cordonnier fish		
N	Valid	134
	Missing	866

Frequency: Reasons for not eating fish sausages					
		Frequency	%	Valid %	Cumulative %
Valid	Allergic	3	.3	2.2	2.2
	Do not like*	23	2.3	17.2	19.4
	Taste	14	1.4	10.4	29.9
	Difficult to prepare	4	.4	3	32.8
	Do not buy	4	.4	3	35.8
	Nightmares**	19	1.9	14.2	50
	Hypertension**	38	3.8	28.4	78.4
	Not my choice	3	.3	2.2	80.6
	Never eaten	8	.8	6	86.6
	Don't remember	5	.5	3.7	90.3
	Not available	7	.7	5.2	95.5
	Hallucination**	3	.3	2.2	97.8
	Too many bones	2	.2	1.5	99.3
Expensive	1	.1	.7	100	
	Total	260	26	100	
Missing	System	740	74		
Total		1,000	100		

\*regroup into 'not preferred one'

\*\*regroup into 'negative perception'

Frequency: Preference of Cordonnier				
		Responses		% cases
		N	%	
How would you prefer to buy Cordonnier?	Fresh whole fish	679	59.3	71.2
	Fillets	163	14.2	17.1
	Smoked	21	1.8	2.2
	Salted	7	.6	.7
	Frozen Whole fish	88	7.7	9.2
	Steaks	14	1.2	1.5
	Precooked vacuum-packed fillets	32	2.8	3.4
	Don't want to buy	141	12.3	14.8
	Total	1145	100	120

Statistics		
Price willing to pay for a ready-to-eat vacuum-packed Cordonnier fillet (300g)		
N	Valid	954
	Missing	46

Frequency: Price willing to pay for a ready-to-eat vacuum-packed Cordonnier fillet (300g)					
		Frequency	%	Valid %	Cumulative %
Valid	< Rs. 130	528	52.8	55.3	55.3
	Rs. 130-150	205	20.5	21.5	76.8
	> Rs. 150	36	3.6	3.8	80.6
	Other	22	2.2	2.3	82.9
	Don't want to buy	163	16.3	17.1	100
	Total	954	95.4	100	
Missing	System	46	4.6		
Total		1,000	100		

## Section B: Consumer knowledge of fish

Frequency: Omega 3 in fish					
		Frequency	%	Valid %	Cumulative %
Valid	Carbohydrate	11	1.1	1.1	1.1
	Dietary fibre	14	1.4	1.4	2.5
	Protein	270	26.9	27	29.5
	Essential fats	387	38.5	38.7	68.2
	Don't know	318	31.7	31.8	100
	Total	1000	99.6	100	
Missing	System	4	0.4		
Total		1,000	100		

Benefits for a child's brain development					
		Frequency	%	Valid %	Cumulative %
Valid	Yes	902	89.8	90.2	90.2
	No	14	1.4	1.4	91.6
	Don't know	84	8.4	8.4	100
	Total	1000	99.6	100	
Missing	System	4	0.4		
Total		1,000	100		

Case summary					
Q B3 <sup>a</sup>	Valid	Missing		Total	
	%	N	%	N	%
1,000	100	0	.0	1,000	100

a. Group

Frequency: Factors that affect fish spoilage				
		Responses		% cases
		N	%	
What makes fish spoil or go bad?	Water	44	3.1	4.4
	Heat	641	44.8	64.1
	Bacteria/germs	518	36.2	51.8
	Enzymes/chemicals	141	9.9	14.1
	Don't know	54	3.8	5.4
	Other*	33	2.3	3.3
	Total	1,431	100	143.1

\* includes environmental conditions, packaging, expiry date on package

**Section C: Consumer attitudes towards fish & fishery products**

<b>Eating fish is good for health</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Strongly disagree	4	.4	.4	.4
	Disagree	1	.1	.1	.5
	Neutral	22	2.2	2.3	2.8
	Agree	355	35.4	37.2	40
	Strongly Agree	572	57	60	100
	Total	954	95	100	
Missing	System	50	5		
Total		1,004	100		

<b>Fish is always available to buy</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Strongly disagree	33	3.3	3.5	3.5
	Disagree	229	22.8	24	27.5
	Neutral	172	17.1	18	45.5
	Agree	365	36.4	38.3	83.8
	Strongly Agree	155	15.4	16.2	100
	Total	954	95	100	
Missing	System	50	5		
Total		1,004	100		

<b>If fish is chilled it will be good quality</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Strongly disagree	26	2.6	2.7	2.7
	Disagree	189	18.8	19.8	22.5
	Neutral	209	20.8	21.9	44.4
	Agree	401	39.9	42	86.5
	Strongly Agree	129	12.8	13.5	100
	Total	954	95	100	
Missing	System	50	5		
Total		1,004	100		

<b>The place where I buy fish is clean and makes me want to buy fish there</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Strongly disagree	18	1.8	1.9	1.9
	Disagree	27	2.7	2.8	4.7
	Neutral	144	14.3	15.1	19.8
	Agree	507	50.5	53.1	73
	Strongly Agree	258	25.7	27	100
	Total	954	95	100	
Missing	System	50	5		
Total		1,004	100		

<b>The place where I buy fish is clean and makes me want to buy fish there</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Strongly disagree	18	1.8	1.9	1.9
	Disagree	27	2.7	2.8	4.7
	Neutral	144	14.3	15.1	19.8
	Agree	507	50.5	53.1	73
	Strongly Agree	258	25.7	27	100
	Total	954	95	100	
Missing	System	50	5		
Total		1,004	100		

<b>Fish is cheaper than other protein/meat</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Strongly disagree	100	10	10.5	10.5
	Disagree	287	28.6	30.1	40.6
	Neutral	238	23.7	24.9	65.5
	Agree	245	24.4	25.7	91.2
	Strongly Agree	84	8.4	8.8	100
	Total	954	95	100	
Missing	System	50	5		
Total		1,004	100		

<b>Fish is always available to buy * Residential Area Cross tabulation</b>					
			Residential area (%)		Total
			Urban	Rural	
Fish is always available to buy	Strongly disagree	Count	17	16	33
		Fish is always available to buy	51.5	48.5	100
		Within residential area	3.5	3.4	3.5
		Percentage of Total	1.8	1.7	3.5
	Disagree	Count	122	107	229
		Fish is always available to buy	53.3	46.7	100
		Within residential area	25.3	22.7	24
		Percentage of Total	12.8	11.2	24
	Neutral	Count	70	22	92
		Fish is always available to buy	76.1	23.9	100
		Within Residential Area	14.5	4.7	9.6
		Percentage of Total	7.3	2.3	9.6
	Agree	Count	94	78	172
		Fish is always available to buy	54.7	45.3	100
		Within Residential Area	19.5	16.6	18
		Percentage of Total	9.9	8.2	18
	Strongly agree	Count	188	177	365
		Fish is always available to buy	51.5	48.5	100
		Within Residential Area	38.9	37.6	38.3
		Percentage of Total	19.7	18.6	38.3
Total	Count	483	471	954	
	Fish is always available to buy	50.6	49.4	100	
	Within Residential Area	100	100	100	
	Percentage of Total	50.6	49.4	100	

<b>Chi-Square Tests – Availability of fish and residential area</b>			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.88 <sup>a</sup>	4	.064
Likelihood ratio	8.93	4	.063
Linear-by-linear association	4.43	1	.035
No. of valid cases	954		

a. 0 cells (.0 percent) have expected count less than 5. The minimum expected count is 16.29

<b>Statistics</b>		
Problems with fish or other fishery products		
N	Valid	971
	Missing	29

<b>Problems with fish or other fishery products</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Yes	138	13.8	14.2	14.2
	No	833	83.3	85.8	100
	Total	971	97.1	100	
Missing	System	29	2.9		
Total		1,000	100		

<b>Statistics</b>		
Problems with fish		
N	Valid	116
	Missing	884

Problems encountered with fish					
		Frequency	%	Valid %	Cumulative %
Valid	Had allergies	37	3.7	31.9	31.9
	Food poisoning	23	2.3	19.8	51.7
	Bad quality of fish	31	3.1	26.7	78.4
	Hypertension*	5	.5	4.3	82.8
	Fish not available	8	.8	6.9	89.7
	Swallowed spines	3	.3	2.6	92.2
	Problems with fish products	1	.1	.9	93.1
	Headache*	1	.1	.9	94
	Expiry date	1	.1	.9	94.8
	Hallucinations	1	.1	.9	95.7
	Expensive	2	.2	1.7	97.4
	Diarrhoea*	1	.1	.9	98.3
	Problems in pregnancy*	1	.1	.9	99.1
	Health problems*	1	.1	.9	100
Total		116	11.6	100	
Missing	System	884	88.4		
Total		1,000	100		

\* Regroup into health problems

Statistics		
Which is the most appropriate means to inform people about the benefits and use of fish and other fishery products?		
N	Valid	937
	Missing	63

<b>Which is the most appropriate means to inform people about the benefits and use of fish and other fishery products?</b>					
		Frequency	%	Valid %	Cumulative %
Valid	Radio	264	26.4	28.2	28.2
	Newspaper	158	15.8	16.9	45.0
	TV shows	358	35.8	38.2	83.2
	Internet	58	5.8	6.2	89.4
	Education	6	.6	.6	90.1
	People, relatives, family	26	2.6	2.8	92.8
	Conversation	6	.6	.6	93.5
	Fishermen	29	2.9	3.1	96.6
	Posters, magazines and flyers	20	2.0	2.1	98.7
	Doctors/health centre/campaigns	5	.5	.5	99.3
	Experience and habit	4	.4	.4	99.7
	Sellers/ fish shops	3	.3	.3	100.0
	Total	937	93.7	100	
Missing	System	63	6.3		
Total		1,000	100		

<b>Case summary</b>					
<b>Q C4</b>	Valid	Missing		Total	
N	%	N	%	N	%
797	79.7	203	20.3	1,000	100

Frequency: Promoting consumption				
		Responses		% cases
		N	%	
How to promote consumption	More fish species on the market*	7	.7	.9
	Increase quality of fish and sanitary level**	35	3.5	4.4
	More advertising and marketing***	83	8.3	10.4
	Lower the price of fish****	213	21.2	26.7
	Information on benefits of fish***	265	26.4	33.2
	Publicity***	111	11.1	13.9
	Promote aquaculture*	32	3.2	4
	Offer services**	11	1.1	1.4
	Culinary activities and new recipes***	49	4.9	6.1
	Promotion****	7	.7	.9
	Increase availability of fish and accessibility*****	84	8.4	10.5
	Media programs***	52	5.2	6.5
	Increase sales point of fish and sellers*****	16	1.6	2
	Encourage fishermen and fishing activities*	10	1	1.3
	New products on the market*	19	1.9	2.4
	Doped fish*	1	.1	.1
	Protect the marine ecosystem and control fishing activities*	6	.6	.8
	Increase import of fish*	2	.2	.3
	Development in fisheries*	1	.1	.1
	Promote aquaculture*	1,004	100	126
Total	1,004	100	126	

\* Regroup into 'increase production of fish'

\*\* Regroup into 'improve quality, sanitary and services'

\*\*\* Regroup into 'communication'

\*\*\*\* Regroup into 'lower the price of fish'

\*\*\*\*\* Regroup into 'increase availability of fish'

**Section D: Consumer profiles**

Statistics							
		Residential Area	Gender	Age group	Educational level	Occupation	Range of household salary
N	Valid	1,000	1,000	1,000	1,000	1,000	1,000
	Missing	0	0	0	0	0	0

Residential area					
		Frequency	%	Valid %	Cumulative %
Valid	Urban	510	51	51	51
	Rural	490	49	49	100
	Total	1000	100	100	

Gender					
		Frequency	%	Valid %	Cumulative %
Valid	Male	507	50.7	50.7	50.7
	Female	493	49.3	49.3	100
	Total	1,000	100	100	

Age group					
		Frequency	%	Valid %	Cumulative %
Valid	18-25	233	23.3	23.3	23.3
	26-35	201	20.1	20.1	43.4
	36-45	231	23.1	23.1	66.5
	46-55	195	19.5	19.5	86
	>55	140	14	14	100
	Total	1,000	100	100	

Educational level					
		Frequency	%	Valid %	Cumulative %
Valid	Primary	158	15.8	15.8	15.8
	Secondary	507	50.7	50.7	66.5
	Tertiary	314	31.4	31.4	97.9
	Vocational	11	1.1	1.1	99
	No schooling	10	1	1	100
	Total	1,000	100	100	

Occupation					
		Frequency	%	Valid %	Cumulative %
Valid	Working	697	69.7	69.7	69.7
	Not working	114	11.4	11.4	81.1
	Student	137	13.7	13.7	94.8
	Pensioner	52	5.2	5.2	100
	Total	1,000	100	100	

Range of household salary					
		Frequency	%	Valid %	Cumulative %
Valid	<Rs 5 000	19	1.9	1.9	1.9
	Rs 5 000-10 000	83	8.3	8.3	10.2
	Rs 11 000-15 000	87	8.7	8.7	18.9
	Rs 16 000-20 000	70	7	7	25.9
	Rs 21 000- 25 000	111	11.1	11.1	37
	>Rs 25 000	242	24.2	24.2	61.2
	Prefer not to reply	388	38.8	38.8	100
	Total	1,000	100	100	

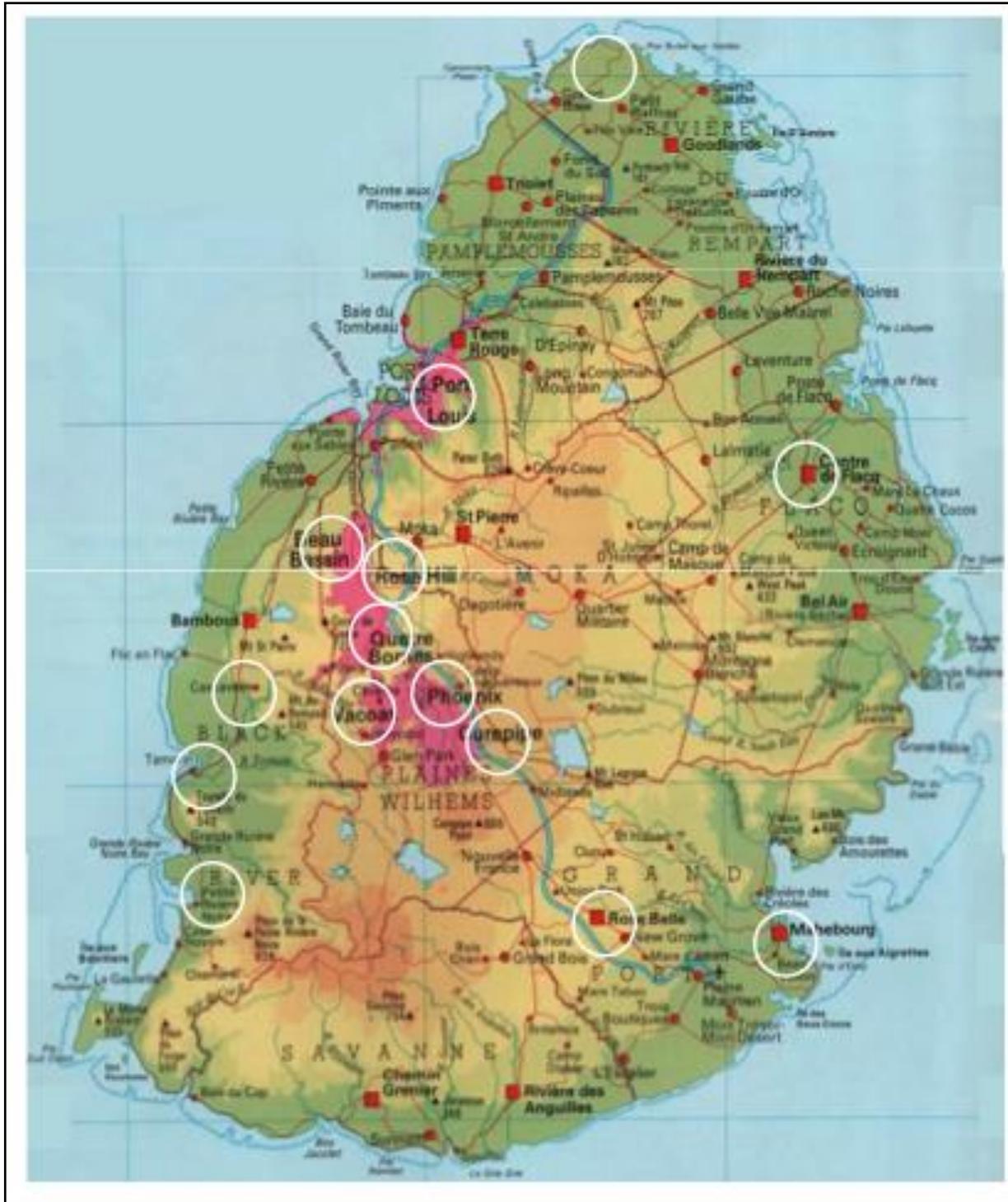
Case processing summary						
	Valid		Missing		Total	
	N	%	N	%	N	%
Residential area * age group	1,000	100	0	.0	1,000	100

Residential area * age group cross tabulation								
			Age group (%)					Total
			18-25	26-35	36-45	46-55	>55	
Residential area	Urban	Count	114	92	114	104	86	510
		Within residential area	22.4	18.0	22.4	20.4	16.9	100
		Within age group	48.9	45.8	49.4	53.3	61.4	51
		Percentage of total	11.4	9.2	11.4	10.4	8.6	51
	Rural	Count	119	109	117	91	54	490
		Within residential area	24.3	22.2	23.9	18.6	11	100
		Within age group	51.1	54.2	50.6	46.7	38.6	49
		Percentage of total	11.9	10.9	11.7	9.1	5.4	49
Total	Count	233	201	231	195	140	1,000	
	Within residential area	23.3	20.1	23.1	19.5	14.0	100	
	Within age group	100	100	100	100	100	100	
	Percentage of total	23.3	20.1	23.1	19.5	14.0	100	

Case processing summary						
	Valid		Missing		Total	
	N	%	N	%	N	%
Residential area * gender	1,000	100	0	.0	1,000	100

Residential area * gender cross tabulation					
		Gender (%)			Total
		Male	Female		
Residential Area	Urban	Count	252	258	510
		Within residential area	49.4	50.6	100
		Within gender	49.7	52.3	51
		Percentage of total	25.2	25.8	51
	Rural	Count	255	235	490
		Within residential area	52	48	100
		Within gender	50.3	47.7	49
		Percentage of total	25.5	23.5	49
Total	Count	507	493	1,000	
	Within residential area	50.7	49.3	100	
	Within gender	100	100	100	
	Percentage of total	50.7	49.3	100	

### Annex 3. Location and survey plan



## Annex 4. Contact details of team members

**Table 7: Contact details of survey team**

<b>Name</b>	<b>Position</b>	<b>Email address</b>	<b>Telephone</b>
<b>Roshini</b> Brizmohun- Gopaul	Project Coordinator	<a href="mailto:r.brizmohun@uom.ac.mu">r.brizmohun@uom.ac.mu</a>	5 2567871
<b>Zainal Banu</b> <b>Kareemun</b>	Project Team Leader, Data Analyst	<a href="mailto:zainal.kareemun@umail.um.ac.mu">zainal.kareemun@umail.um.ac.mu</a>	5 933 3876
<b>Jean François</b> <b>Ludovic</b> Baya	Data Analyst	<a href="mailto:jean.baya@umail.uom.ac.mu">jean.baya@umail.uom.ac.mu</a>	5 739 2882
<b>Chiranjivee</b> <b>Teesha</b> Bahoorun	Project Enumerator	<a href="mailto:teesha.baboorun@umail.uom.ac.mu">teesha.baboorun@umail.uom.ac.mu</a>	5 981 0181
<b>Mehtaab Bibi</b> <b>Begum</b> Conhyea	Project Enumerator	<a href="mailto:mehtaab.conhyea@umail.uom.ac.mu">mehtaab.conhyea@umail.uom.ac.mu</a>	5 948 7838
<b>Khawla Lutf- Un-Nissa</b> Domun	Project Enumerator	<a href="mailto:khawla.domun@umail.uom.ac.mu">khawla.domun@umail.uom.ac.mu</a>	5 734 2959
<b>Roomesh</b> Doolum	Project Enumerator	<a href="mailto:roomesh.doolum@umail.uom.ac.mu">roomesh.doolum@umail.uom.ac.mu</a>	5 934 6974
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<b>Ishtee</b> La Rose	Project Enumerator	<a href="mailto:ishtee.la@umail.uom.ac.mu">ishtee.la@umail.uom.ac.mu</a>	5 777 4349
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Yogeshwaree Prisha Rambojun	Project Enumerator	<a href="mailto:yogeshwaree.rambojun@umail.uom.ac.mu">yogeshwaree.rambojun@umail.uom.ac.mu</a>	5 787 1684

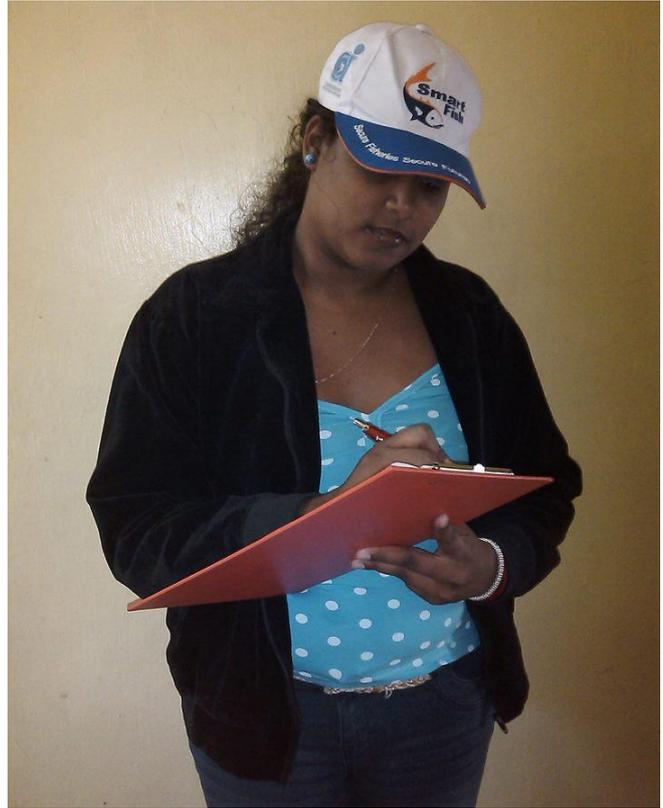
## Annex 5. Photos



Rabbit Fish

### Enumerators at work





**Discussing the pre-test with the CEO of the FIT**



**Enumerator team with Ansen Ward at AFRC**



SmartFish is a regional fisheries programme managed by the Indian Ocean Commission, funded by the European Union and co-implemented by the Food and Agriculture Organization of the United Nations. SmartFish, which operates in 20 countries throughout the East and Southern Africa - Indian Ocean region, focuses on fisheries governance, management, monitoring, control and surveillance, trade, and food security.

As an island country, Mauritians love to eat fish and culinary habits have not changed much over the years. At the same time, very little is known about the habits of fish consumers in Mauritius. This report presents the results of a survey that was carried out on the fish consumption habits of both the rural and urban population across the country and provides additional information on demand, supply, availability, and fish market chain issues.

It is hoped that the results of this survey might be of use as a basis for the further development of policies and strategies by the authorities concerned.



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