



FIMSUL

# Report on Bivalve Market Demand Survey

Project Title

## Fisheries Management and Sustainable Livelihood-Component II - Bivalve Farming

Report prepared by

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## Executive Summary

Bivalves (Oysters, Mussels and Clams) are molluscan fishery resources, which are comparatively less consumed in India. They are natural bio filters that purify the ecosystem besides providing nutritional security to the fish consuming population. However, in spite of the benefits, the consumption of these bivalves has improved only marginally thanks to the awareness drive initiated by Institutes like CMFRI.

Considering the potential of bivalve availability, anticipated consumption and also the potential livelihood opportunities provided by bivalve capture/ farming, a study was proposed under FIMSUL – II exclusively focusing on bivalve farming as a component with the following objectives. a) To study the demand and market potential of edible Oysters and green mussels in local and outside markets. b) To identify suitable sites for farming and spat collection and decide on the seasons of operations & marketing options. c) To identify suitable beneficiaries for carrying out farming demonstrations in a systematic manner and develop supply chain for value addition and marketing.

To estimate the demand market potential, two types of market surveys were conducted. The first survey was conducted in the villages where the bivalves are caught, sold and consumed. The second survey to estimate the market potential was conducted involving the hotels and resorts in both Chennai and Puducherry, who serve bivalves to their customers to assess the market potential.

The market survey for estimation of demand and supply of mussels / clams / oysters and also the survey to assess the consumers Perception about mussels/oysters/clams consumption was carried out in 11 selected villages in Tamil Nadu and Puducherry, across 1,972 respondents. The analysis of the market demand survey revealed that very limited number of fishers only go for clam fishing. Most of the respondents (85%) revealed that, the mussel production has decreased over the years. Among the fishers who go for clam fishing, about 60 per cent of them go based on the demand for clam and not on regular basis. Regarding the method of sales, only clam meat selling is popular compared to depurated meat. About 50 per cent of the fishers sell clams with shell only. Most of the respondents (87%) were aware of the medicinal value

of the bivalves. However, they are not aware of the ITK's associated with bivalves. About 60-70 per cent of the fishers consume mussel but most of them (76%) consume only occasionally. Most of the (about 85- 90%) respondents were not aware of any value addition to bivalves. The consumers also expressed that they had no health issues after eating mussels or clams.

The analysis of the consumption pattern indicated that most of the consumers (91%) were aware that clam meat, mussels and oysters can be consumed and also aware (96% of the respondents) of the medicinal values of these bivalves. Most of them (96%) preferred to buy depurated meat to whole clam. Regarding the frequency of consumption, most of the consumers (99%) eat clam occasionally and all of them buy clams from fishers directly. The average quantity purchased for consumption ranged from 0.5 kg to 1.0 kg. Most of the consumers (82%) expressed that the availability of clams is not regular. The consumers expressed that they had no health issues after consuming mussels and about 55-60 per cent eat mussels in their locality. All the consumers prepare "mussel gravy" (45-50%) from the mussels, about 30% consume clam curries and they told that they are unaware of any other value added products like mussel soup or mussel pickle. The consumers expressed that they consume mussels regularly due to its taste (ranging from 65 to 78% of the respondents), followed by low price (9%), availability (8%) and medicinal value (5%). The expressed the concern that mussels are not available in all the fish markets.

The market potential was estimated by surveying the hotels and resorts in Chennai and Puducherry. In the study area 145 resorts and 82 hotels were surveyed in Chennai and Puducherry. It was found that the market potential worked out to 131 tonnes per annum comprising 73 tonnes (55%) of oysters and 58 tonnes (45%) of mussels. The total demand for bivalves including all sections namely hotels, hatchery and domestic consumption worked out to 201 tonnes comprising 113 tonnes of oysters and 88 tonnes of mussels. This gives a hope that there is scope to further increase the potential by increasing the awareness on the benefits of consumption of bivalves like mussels, clams and oysters in future.

Thus we can conclude that, the results of the market demand and consumer's perception surveys indicate that there is scope for improving the mussel production from these villages with adequate technical and financial support from the Government. Similarly, the results of the survey for the estimation of market potential indicates that there is scope to further increase the potential by increasing the awareness on the benefits of consumption of bivalves like mussels, clams and oysters in future. These can be achieved with the involvement of the agencies like Tamil Nadu Fish Development Corporation (TNFDC) by coordinating the marketing process of the bivalves acting as a link between the fishers and the market.

# 1. Introduction

Bivalves (Oysters, Mussels and Clams) are molluscan fishery resources, which are comparatively less consumed in India. They are natural bio-filters that purify the ecosystem besides providing nutritional security to the fish consuming population. However, in spite of the benefits, the consumption of these bivalves has improved only marginally thanks to the awareness drive initiated by Institutes like CMFRI.

Considering the potential of bivalve availability, future consumption and also the potential livelihood opportunities provided by bivalve capture/ farming, a study was proposed under FIMSUL – II exclusively focusing on bivalve farming as a component.

The study envisaged three objectives under bivalve farming viz.,

- a) To study the demand and market potential of edible Oysters and green mussels in local and outside markets.
- b) To identify suitable sites for farming and spat collection and decide on the seasons of operations & marketing options.
- c) To identify suitable beneficiaries for carrying out farming demonstrations in a systematic manner and develop supply chain for value addition and marketing.

To estimate the demand market potential, two types of market surveys were conducted. The first survey was conducted in the villages where the bivalves are caught, sold and consumed. The second one was conducted involving the hotels and resorts in both Chennai and Pondicherry, who serve bivalves to their customers to assess the market potential. The results are presented below.

## 2. Market survey for Bivalves

Two types of market surveys were conducted. One survey was conducted for estimation of demand for bivalves and another survey for assessing the consumer's perception on consumption of bivalves. Two separate schedules were prepared and the survey was conducted in eleven selected villages and a total of 1,972 respondents were covered under this survey.

**Table 1 List of villages surveyed for estimation of demand and supply of mussels/clams/oysters**

Sl. No	Name of the Villages	Number of Respondents	per cent to total
1	Senjiamman Nagar	101	5.12
2	Tonirevu	250	12.68
3	Jameelabath	403	20.44
4	Mouthuvaram Kuppam	106	5.38
5	Cuddalore-Chinnakuppam	129	6.54
6	Cuddalore-Periyakuppam	304	15.42
7	AliKuppam	142	7.20
8	Alankarai Kuppam	151	7.66
9	Kottaikadu	184	9.33
10	Ariyan Kuppam, Pondicherry	102	5.17
11	Nonan Kupam, Pondicherry	100	5.07
	<b>Total</b>	<b>1,972</b>	<b>100.00</b>

## 2.1 Market survey for estimation of demand and supply of mussels / clams / oysters

### 1. SENJIAMMAN NAGAR

Senjiamman Nagar is located at 13° 25.262' N and 80° 16.366' E in Thiruvallur District. The average age of the respondents is 37 years and every member in their families is involved in picking oysters and green mussels regularly. The oysters production in the village is declining considerably as expressed by 65 per cent of respondents, owing to lack of spat settlement.

The average oysters picked in a day is 5 kg and sold at an average price of Rs. 50/kg. About 75 per cent of the respondents sell the oysters by themselves and 16 per cent of the respondents sell to oysters to super markets, 6 per cent of the oysters is sold to local consumers and (7%) of the oysters is sold to others. However, this village people were not involved in exporting of oysters.

About 93 per cent of the respondents expressed that fishermen picked the mussels by based on the demand and they pick the mussels about 6 to 7 hours/day. On an average two persons per family is involved in hand picking. About 44 per cent of the fishers expressed that the mussel business is profitable while 34 per cent expressed that it is not profitable. Most of the respondents (78%) expressed that they are doing mussel picking on daily income basis.

The average size of green mussel available in the area is 25 grams and they do not have the mussels throughout the year. Most of the villagers (59%) expressed that oysters is sold as raw meat, while 31 per cent expressed that depurated oysters is sold to their customer. Again, out of those who sold the oysters, 61 per cent of the respondents sold the oysters with shell while 22 per cent without shell. After meat extraction, 28 percent of fishers stated that they send the oysters shell to lime industry and the remaining 72 percent of fishers dumped the shell on shore itself.

With regard to availability and unit price, the respondents expressed that the oysters is available in summer season only at a depth of 4m and that the villagers are willing to buy green mussels at an average price of Rs. 225/kg. They realized an average net profit of Rs.200 per day.

It was found that about 30 percent of the fisher women in this village are involved in mussels/ oysters picking as an occupation. Most of the respondents (78 %) expressed that the fishermen

are involved maximum in oysters picking. The respondents expressed that the villagers have 5 years of experience in handpicking of oysters.

Most of the respondents expressed that they do not have an idea about nutrient contents/ITK/ Medicinal uses of the products. The respondents expressed that the villagers like to eat green mussel in gravy forms and they are addicted to eat the mussels for taste. The respondents expressed that everyone in a family eat the mussels regularly. There are only higher proportion of occasional buyers for oysters

The process of value addition of bivalves is very limited as only about 15 per cent of fishers are trying with doing salting in that value addition process. The respondents expressed that the average of 2 to 3 persons in a family are buying the mussels regularly and about 50 percent of the people prefer to consume green mussels. The respondents expressed that the consumer preferred green mussels to oysters due to taste only and the average quantity of green mussels purchased was around 2.5 kg at a time.

All the fishers expressed that there is no problem in availability of mussels owing to pollution and that, they are not facing stomach pain or any other health issues after eating green mussels and oysters. Most of the people who are involved in hand picking (99%) expressed that they didn't face any kind of health issues. Moreover, the respondents expressed that there is massive local demand for the products.



Interaction with villagers of Senjiamman Nagar



## 2. TONIREVU

Tonirevu is located at 13° 27.672' N and 80° 18.644' E in the Thiruvallur District. The average age of the respondents is 43 years and 21 per cent of the families do the oysters and green mussels picking regularly. Most of the respondents (54%) of the villagers told that the oysters and green mussels production were completely gone down.

The average oysters picked in a day is 2 kg and sold at an average price of Rs. 98/kg. About 29 per cent of people exported the oysters and mussels to the other states, while 11 per cent of the respondents are selling to the local consumers and 38 per cent of the respondents are selling to both local consumers and exporters.

About 82 per cent of the respondents expressed that fishermen picked the mussels based on the demand and they extract the mussels for about 5-8 hours per day. On an average one person per family is involved in hand picking for two hours per day. About 81 per cent of the fishers expressed that the mussels business is profitable while 18 per cent expressed that it is not profitable. Most of the respondents (95%) expressed that they are doing mussels picking on daily income basis.

About 42 per cent of the respondents expressed that there is scarcity of mussels throughout the year while they get oysters frequently in this area with its size ranging from 5 to 10 grams. Most of the respondents (90 %) sell the oysters and mussels as a raw meat, while remaining 10 per cent sell depurated oysters and mussel meat. About 51 per cent of the fishers sell the oysters and mussels with shell, 11 per cent without shell and the remaining 37 per cent sell the mussel meat. The respondents expressed that after the meat extraction the shell is directly packed off to the lime industries

With regard to availability and unit price, the respondents expressed that the oysters is available in all season in a year at 5m depth and it is mostly found in the river side. The consumers were willing to buy green mussels at an average price of Rs. 75/kg. They realized an average net profit of Rs.303 per day.

It was found that about 22 per cent of the fisher women in this village doing this mussels/ oysters picking as an occupation. Most of the respondents (83%) expressed that the fishermen are involved maximum in oysters and mussel picking. The respondents expressed that the villagers have an average experience of 14 years in handpicking of oysters

About 42 per cent of the respondents expressed that they have an idea about nutrient

contents/ITK/medicinal uses of the products. The respondents expressed that the villagers like to eat green mussel in gravies and 70 per cent of them are addicted to eat the mussels for taste. The respondents (63%) expressed that everyone in a families eat the mussels regularly. There are higher proportion of occasional buyers (63%), followed by weekly buyers (28%) and 10 per cent irregular frequencies ranging from a few days to a fortnight.



Discussing about market survey schedules to the villagers of Tonirevu

Most of the respondents (92%) expressed that villagers don't have an idea about value addition of the products after picking and 2 per cent of the people go with the value addition, that too with salt. The proportion of mussel buyers in this village is very minimum at below 10 per cent of the total population. The consumer preference is high for clams and oysters at 21 per cent of the respondents followed by the preference for oysters (20%) and mussels & clams (12%). The respondents expressed (28%) consumer likes to prefer green mussels for taste purpose likewise (11%) is taste and cheaper and (22%) is taste as well as medicine and cheaper. The people buy green mussels and oysters has as an average of 500grams at a time.

About 45 per cent of the people state that there is problem in availability owing to pollution and 55 per cent are do not respond to this query. All the fishers expressed that they are not facing stomach pain or any other health issues after eating green mussels and oysters. While hand picking the mussels 43 per cent of people expressed that they didn't get any health issues but 57 per cent fishermen expressed that they are facing some health issues. The respondents expressed that the (60% of the people) unveils there is a local demand for the product regularly but on the same way 40% of the people expressed there is no local demand for the product.

### 3. JAMEELABATH

Jameelabath is located at 13° 225.547' and 80° 18.610' E in Thiruvallur District. The average age of the respondents is 36 years and less than five per cent of the families involved in hand picking of oysters and mussels. The villagers expressed that percentage of production of oysters and clam were declined due to climate changes (33%), pollution (9%) and lack of seed is (nearly 2%)

The average oysters picked in a day ranged from 10 to 15 kg and sold at an average price of Rs. 120/kg. Almost all oysters and mussels are sold to the local agents and very few of them sell to the local consumers according to the demand. Most of the respondents (99%) sell the oysters and clams to the agents and very few of them sell to the local consumers according to the demand.

The villagers responded that the fishermen do the hand picking of the oysters and clams based on demand only. About 60 per cent of the respondents expressed that fishermen picked the mussels based on the demand and they extract the mussels for about 4-7 hours per day. On an average two persons per family were involved in hand picking for two hours per day. About 98 per cent of the fishers expressed that the mussels business is not profitable while only two per cent expressed that it is profitable. Most of the respondents (95%) expressed that they are doing mussel picking on daily routine basis and are doing for their daily income. They usually sell depurated meat to their customers.

Most of the respondents expressed that oysters and green mussels resources were not available throughout the year; Mostly oysters are sold without shell while negligible proportion of less than a per cent sells oysters with shells. After meat extraction, the fishermen dumped the oysters shells on the shore itself.

Regarding availability and unit price, most of the respondents (95%) do not know the species they prefer to buy and less than 5 per cent of the people prefer to buy the green mussels species at Rs. 50 per kg. About 55 per cent expressed that they do not know the average net profit per day and their monthly income and very few of the people in their village disclose the average net profit at the price of Rs 40 to 200 per day.

It was found that about 50 per cent of the fisher women in this village are involved in mussels/oysters picking as an occupation. Most of the respondents expressed that the fishermen are involved maximum in oysters and mussel picking. The respondents expressed that the villagers have an experience ranging from 2 to 25 years in handpicking of oysters and 35% of the respondents said that they do the oysters picking traditionally



Interaction with villagers in Jameelabath

The villagers' expressed that they do not have the knowledge of nutrient contents/ITK/medicinal uses of oysters and mussels. Most of the respondents expressed that the villagers do not like to have oysters and mussels and they are not the regular consumers. Most the respondents expressed that 85% of the consumer arrived to buy the oysters daily while 15 per cent of consumers arrive to buy occasionally.

The villagers expressed that after hand picking of the oysters and mussels they didn't mix anything for value addition and the negligible proportion of less than a percent of the villagers do the value addition of the products like drying and keeping for off season to sell the products. Sixty seven percent of the respondents expressed that the 2 to 3 consumers regularly buy the products in their village. Most of the respondents (91%) expressed that the consumer prefer only the green mussels for medicinal purpose. The respondents expressed that 43 per cent of the villagers picks the mussels based on the demand and remaining buy the mussels ranging from 2 to 6 kg at a time.

The villagers expressed that after consuming the oysters no one has reported stomach pain or any other health issues. Most of the respondents (99% ) expressed that they are facing the health issues while handpicking of the mussels and oysters. Most of the respondents expressed that there is no local demand of the products and there is no problem in availability owing to pollution.



## 4. MOUTHVARAMKUPPAM

Mouthvaramkuppam is located at 13° 13.35' N and 80° 19.39' E in Chennai District. The average age of the respondents is 39 years and 55 per cent of the families do the oysters and green mussels picking regularly. Most of the respondents (97%) of the villagers told that the oysters and green mussels production were completely slashed down.

The average oysters picked in a day is 7 kg and sold their oysters to local consumers. Most of the respondents expressed that fishermen picked the mussels and oysters based on the demand. On an average three persons in a family are involved in hand picking and spend about five hours per day in this activity. About 81 per cent of the fishers expressed that the mussels business is profitable while 18 per cent expressed that it is not profitable. Most of the respondents (95%) expressed that they are doing mussels picking on daily routines basis and it is a source of their daily income.

The respondents expressed that the green mussels are widely available in this area and oysters is usually available in three months. The respondents expressed that the villagers sell their oysters as a raw meat. About 31 per cent of the vendor sell the oysters with meat, while 69 per cent sells the oysters meat along with shell and shells are dumped after meat extraction on the river sides.

Mostly, the oysters are abundant in summer at 4 ft depth. The consumers were willing to buy green mussels at an average price of Rs. 200/kg. They realized an average net profit of Rs.500 per day.

It was found that about 75 per cent of the fisher women in this village are involved in mussels/oysters picking as main occupation. Most of the respondents (83%) expressed that the fisherwomen (100%) are involved maximum in oysters picking by hand. The respondents expressed that the villagers have an average experience of 30 years in handpicking of oysters.

The people expressed that they don't have an idea about nutrient contents/ITK/Medicinal uses of the products. The respondents expressed that the villagers like to eat green mussels regularly and on an average 50 per cent of the people consume the oysters on regular basis. There are higher proportion of weekly buyers (94%), followed by bi-monthly buyers (6%).

The respondents expressed that the after hand picking they didn't mix anything for value addition. Most of the respondents (93 per cent) expressed that they are doing the mussel



Interaction with the villagers while distributing the market survey schedules in Mouthvaramkuppam

pickling for value addition process. About 12 per cent of the consumers were buying oysters regularly. The villagers don't want to respond on the preference among the products.

Most of the respondents expressed that there is problem in availability owing to pollution. All the fishers expressed that they do not face any health issues after consuming and handpicking of oysters. The people in this village ratified that there is local demand of the product seamlessly

## 5. CUDDALORE CHINNA KUPPAM

Cuddalore Chinna Kuppam is located at 12° 47.412' N and 80° 15.191'E in Kancheepuram District. The average age of the respondents is 45 years and very few are involved in hand picking of oysters and mussels. About 90 percent of the villagers expressed that percentage of production of mussel has increased.

Most of the respondents (97%) expressed that based on the demand fishermen used to pick oyster and few numbers only involved in this activity. Most of the respondents (88%) expressed that villagers are finding the oysters business profitable and about 12 per cent expressed that it is non-profitable.

Most of the respondents expressed that the fisherman picking the oysters on a daily routine basis. Most of the respondents (67%) stated that there is oysters scarcities throughout the year particularly in this area. The villagers do not reveal the type of selling, method of selling and the exploitation of the oysters shells.

The villagers don't want to reveal the average net profit per day and their monthly income and on the same way villagers don't want to reveal the status of fisherwomen or children doing as this an occupation and no of years of experience in picking of oyster. The villagers don't want to unveil from when onwards doing the clams picking.

The villagers' expressed that they do not have the knowledge of nutrient contents/ITK/ Medicinal uses of oysters and mussels. Most of the respondents (72%) liked to have oysters. The respondents expressed that 74 per cent consumed oysters regularly and the remaining did not like to eat oysters. It was also found that about 30 per cent of the consumers are occasional consumers in the village.

The respondent expressed that the villagers do not have an idea about value addition of the oyster. The villagers expressed that there is no regular oysters buyer in their village and also they did not respond the reason for preference, problem in pollution, facing health issues while consuming and the local demand of the oysters.

## 6. CUDDALORE PERIYA KUPPAM

Cuddalore Periya Kuppam is located at 12° 26.40' N and 80° 08.22'E in Kancheepuram District. The average age of the respondents is 46 years and a negligible proportion of the people are involved in hand picking of green mussels and clams regularly.

They are being sold to local consumers. The respondent expressed that mussel production has declined due to climate changes (16%), pollution (36.5 %) and lack of demand (38.8 %) and others (less than 1%).

About 42 per cent of the respondents expressed that they pick the mussels based on the demand. About 25 per cent of the fishermen spend 2 hours/day for mussel picking. On an average 3-4 persons are involved in hand picking. About 19 per cent of the fishers expressed that the mussel business is profitable while 81 per cent expressed that it is not. About 37 per cent of the respondents are doing mussel picking on daily routine basis and it is the major source of their income.

Regarding availability and unit price, respondents expressed that the oysters are mostly available from January to May while green mussels are available throughout the year. About 13 per cent of the villagers are willing to buy green mussels only. About 22 per cent of mussels and clams are being sold after depuration. About 51% of the vendor sells the mussels with shell while few are sold without shell (3%). The mussels were sold at Rs.18 per kg. The respondents expressed that after the meat extraction, the shell is directly packed off to the lime industries. About 22 per cent of the fisher women in this village are doing mussel/oysters picking activity as an main occupation. The respondents expressed that the villagers have an average experience of about three years in handpicking of oysters, while only less than one per cent of the respondents had more than three years' experience.

About 12 per cent of the respondents expressed that they have an idea about nutrient contents/ITK/medicinal uses of the products. The respondents expressed that only 14 per cent of the villagers like to eat green mussel. About 25 per cent of the consumers buy mussels occasionally while 14 per cent of the consumers buy mussels daily.

Most of villager people don't have an idea about value addition of the products after picking and one per cent of the people go with the value addition, that too with salt. About 22 per cent of the fishers keep the mussels for off-season sales and selling. The proportion of mussel buyers in this village is about 13 per cent of the total population. The consumer preference is



high for green mussels clams. About 28% of the consumer likes to prefer green mussels for taste (97%) and three per cent due to this medicinal value.

About 23 per cent of the people state that there is a problem in availability owing to pollution and 77 percent are not aware about this. All the fishers expressed that they are not facing any other health issues after eating green mussels and oysters. Most of the respondents said that there is no local demand for the products.



Distribution of market survey schedules to the villagers in Cuddalore Periyakuppam



## 7. ALIKUPPAM

Alikuppam village is located at 12° 26.31' N and 80° 08.23'E in Kancheepuram District. The average age of the respondents is 43 years and no one is fully involved in oysters and clam picking. Most of the villagers (88%) expressed that percentage of the production of oysters and clam were completely slashed down.

About 60 per cent of the fishermen are involved in hand picking of the oysters and clam based on demand. Most of villagers (93%) stated that there are no sales of the clams in this village, while seven per cent of the people sell the clams as a raw meat. Most of the respondents (51 % of fishers) sell the clams without shell. The respondents expressed that they do not utilize the clams and oysters shell after the meat extraction.



Distribution of market survey schedules to the villagers of Alikuppam

About 87 per cent of the villagers have an idea about nutrient contents/ITK/medicinal uses of the clams. About 15 per cent of the respondents like to prefer clams in the form of gravies. Forty per cent of the village consumes clams regularly. Most of the respondents (75%) expressed consumer occasionally arrived to buy the clams. Out of the consumers, 25 percent prefers to buy clams while 16 per cent like to buy green mussels.

The villagers asserted that there is no problem of availability of mussels due to pollution. The respondent ratified that they didn't face any health issues after consuming and handpicking of clams, while in their village there is no local demand of the products.

Villagers were not aware about profit in the oysters and clam picking and also they do not know which species people prefer to buy at what price. The villagers did not reveal about how much the consumer buy the clams at a time and what species they prefer to buy etc.

## 8. ALAMBARAIKUPPAM

Alambaraikuppam village is located at 12° 15.955' N and 80° 00.766' E in Kancheepuram District. The average age of the respondents is 45 years and no one involved in hand picking of oysters and mussels. Mostly village people consume bivalves. Most of the respondents expressed that the production of oysters has declined in this area but they don't have idea about reason for this.

Most of the respondents expressed that the consumer prefer oysters for medicinal purpose. The villagers do not know the method of selling and types of selling, season of availability at what size and what depth of oysters is available. Also, they did not want to reveal the consumer how much they buy the clams at a time and what species they prefer to buy.

Villagers were not aware about profit in the oysters and clam picking and also they do not know the which species people prefer to buy at what price. The villagers did not reveal about how much the consumer buy the clams at a time and what species they prefer to buy.

## 9. KOTTAIKADU

Kottaiikadu village is located at 12° 15.14' N and 79° 59.41' E in Kancheepuram District. The average age of the respondents is 46 years and 98 per cent of the families involved in hand picking of oysters and mussels. Most of the villagers expressed that the oysters and mussels production were completely declined owing to lack of seed

Most of the fishermen sell the oysters at the price of Rs 160 /kg and 57 per cent of the fishers sell the oysters and mussels to the local agents and remaining 43 per cent sell the oysters and mussels to local consumers.

The fishermen are doing the hand picking of the oysters and clams based on demand only and they are involved in the mussels picking for about 6-7 hours per day. On an average 2 to 3 persons per family are involved in hand picking. About 85 per cent of the fishers expressed that the mussel business is not profitable while only 15 percent expressed that it is profitable. Most of the fishers (95%) are doing mussel picking on daily routine basis and it is their main source of daily income.

The oysters and mussels are available throughout the year. The villagers expressed that 22 per cent of villagers sell the oysters after depuration and 78 per cent sell the meat to the vendors. Most of the villagers sell the oysters with shell and the negligible proportion of less than a per cent sell the oysters without Shell. After extraction of the meat, they completely packed off the oysters shell to lime industries.

With regard to availability and unit price, the villagers do not have idea about the seasons of mussel availability. The villagers are willing to buy the oysters at Rs. 160/kg. Most of the respondents (95%) do not know the species they prefer to buy and the negligible proportion of less than 5 per cent of the people prefer to buy the green mussels at the price of Rs. 50 per kg. About 83 per cent expressed the average net profit per day was Rs.300 while 17 per cent told that their profit was Rs.350 per day.

Most of the respondents (89%) informed that two to three person in a family were doing this as an occupation. In this village fisher women actively entail the oysters business. The average experience for the villagers varies from 5 to 40 years but they ratified that villagers do the oysters picking traditionally. In this village (70%) of the people expressed that they have 40 to 50 years of experience in having oysters picking.

Most of the villagers don't have an idea about nutrient contents/ITK/medicinal uses of the products. Most of the respondents (88%) expressed that they preferred to eat green mussel



and oysters in the form fries and curries, while 12 per cent of peoples prefer to have fries only. The average percentage consumption frequency in this village is about 100 persons (77%), followed by 150 persons (21%) and 200 persons (less than 5%). The fishermen expressed that frequency of buying oysters is daily and weekly.

The villagers didn't do any value addition oysters & mussels or they do not attempt any other activities such as drying, keeping for off season to sell, salting, pickling and others among these fishermen. The respondents expressed that 89 per cent of the consumer preferred to buy oysters and clam, while 11 per cent prefers only oyster. The villagers expressed that 67 per cent of the customers buy the oysters for taste and 17 per cent of the customers preferred for medicinal purpose and very few of the peoples (6 %) prefer for cheap rate. The villagers said that 93 per cent of peoples buy a kg at a time, while seven per cent of people buy 2kg at a time.

There is no problem in availability of the oysters owing to pollution. The villagers expressed that after consuming the oysters no one has reported stomach pain or any other health issues. While hand picking oysters 99 per cent of the people expressed that they didn't get any health issues but the negligible proportion of less than a percent of the people facing the minor health issues.



Interaction with the villagers of Kottaikadu during market survey

## 10. ARIYANKUPPAM, PUDUCHERRY

Ariyankuppam village is located at 11° 53.36' N and 79° 48.24' E in Puducherry District. The average age of the respondents is 45 years and 78 per cent of the families are involved oysters and green mussels picking regularly. The respondents expressed that the villagers do not have awareness about the increase or decreasing of the clams.

The respondents expressed that average clams picked in a day is one kg and they sell at an average price of Rs 200/kg. Most of the respondents (99%) of the people sell their clams to the local consumers. Most of the village people (98%) are found picking the clams on demand.

The fishermen usually do hand picking of the clams for about 2 hours / day. The villagers expressed that on an average two persons in their family involved in clam picking. In this village the respondents expressed that clam business is 100% profitable. Most of the respondents said that (98%) of the fisherman doing clam picking on daily income basis.

About 67 per cent of the people state the clams scarcity is throughout the year and clams are abundantly available in this area and mostly the average the size of the clams is 500grams. The respondents expressed that (73%) of the people sell the clam as a raw meat and remaining 27 per cent depurated clam meat. Most of the respondents (75%) sell the clams with shell, while four percent of the clams without shell and remaining clams were sold for meat. After the meat extraction the outer shell of the clams are dumped on the river bed.

Regarding availability and unit price, the respondents expressed that the oysters are mostly available in three months. Most of the consumers (73%) desired to buy clams at an average price of Rs 200/kg. The villagers don't want to reveal the average net profit per day and their monthly income

On the same way villagers don't want to reveal the status of fisherwomen or children doing this an occupation. The villagers don't want to divulge fishermen or fisherwomen maximum involved in hand picking. The respondents expressed that the villagers have an average of 9.5 years of experience in picking of clams.

Most of the respondents (97%) asserted that they have ideas about nutrient contents/ITK/medicinal uses of the products. The clam's meat is used to cure jaundice. Most of the respondents (75%) like to buy clams and they prefer to eat clam fries and curries. About 55 per cent of the people in their village consumed clams regularly. The villagers expressed that the occasional consumers are about 55 per cent, followed by weekly consumers (27%) and bimonthly consumers (16%).

Most of the villagers don't have an idea about value addition of the products after picking of clams. Most of the respondents (86%) in these villages do not involve the value addition but nine per cent of the people keeping them for off-season and the negligible proportion of less than a percent stacked the clams for drying and pickling. About 14 per cent of the consumers buy clams regularly. About 98 per cent of the respondents said that there are potential buyers for clams.. The respondents expressed that 57per cent of the consumer preferred clams for taste and medicinal purpose, while 14 per cent is consuming as it is cheaply available. Consumers buy clams has an average of 500grams at a time.

Most of the villagers ratified that there is no problem in availability of clams or mussels owing to pollution. After consuming clams no one reported stomach pain or any other health issues. After picking of the clams by hand no one reported any health issues. The people in the village say that there is local demand of the product seamlessly.

## 11. NONANKUPPAM, PUDUCHERRY

Nonankuppam village is located at 11° 53.06' N and 79° 48.03' E in Puducherry District. The average age of the respondents is 47 years and less than two per cent of the families are involved in hand picking of oysters and mussels. Most of the respondents (98%) expressed clam source is declined owing to lack of seed.

Most of the village people (97%) don't sell their clams and they picked for their consumptions and the marginal proportion of less than 3% are being sold to the local consumers.

The villagers responded that the fishermen do the hand picking of the oysters and clam based on demand only. They also expressed that fishermen picked the mussels based on the demand and they extract the mussels for about two hours per day. Only about seven per cent of the fishermen picking the clam based on the demand and the remaining 93 per cent stated that clam picking not done in their village. All the respondents expressed that the clam business is not profitable. About two percent of the fisher folks picked clams on daily income basis

With regard to availability and unit price, most of the respondents (99%) stated that the clams are available throughout the year. Most of the respondents (97%) stated that the consumers purchased clams only occasionally. The respondents expressed that they didn't face any health issues after consuming and handpicking of clams. Most of the respondents expressed consumption of clams cure jaundice. The respondents expressed that, (60% of the villagers) there is no local demand of the product. The people buy clams on an average of 5Kg at a time.

Note: The villagers don't want to reveal the method of selling, the season availabilities, average net profit per day and what they do the clams shell after the meat extraction. Likewise they did not disclose the medicinal uses of the products, the value addition of the products and related details.



## Distribution of market survey schedules to the villagers





## 2.2 Consumers Perception about mussels / oysters / clams consumption

### 1. SENJAMAN NAGAR

The average age of the fishermen is 37 years and their average monthly income is Rs. 2000. The prime occupation of the village people is fishing; however 75% of the villagers have the awareness of mussel oysters and clam consumption.

The respondent expressed that 24 per cent of the villagers were aware about the medicinal uses of the products and they did not respond to the question on procurement of oysters as depurated meat. Most of the respondents (61% of the consume) said that they eat the oysters and mussels occasionally followed by daily, weekly, bimonthly and monthly consumers.

The consumers buy the oysters and mussels from nearby super market and fish market and the societies were accepted to consume the oysters and mussels. The consumers buy the mussel meat ½ kg at a time at the cost of Rs 100 / Kg and the most of the respondents (99%) expressed that the mussels are not available regularly.

The villagers prefer to have green mussels at the size of 50 gms per piece and the reason for the preference mussels they are addicted to the taste of the mussels. However 37 per cent of the people in their villagers responded that they facing stomach pain after consuming the clams.

The villagers proclaim that in their communities every one consumes the oysters and green mussel and they prefer to have fried form of the mussel and oyster.

About 23 per cent of the peoples have heard about the mussel pickles and soup and its value added products and 52% of the villagers responded that they able to get the mussels in all markets. Most of the respondents (63%) liked to have fish only compared to oysters and mussels because it is very easy to eat.

## 2. TONIREVU

The average age of the fishermen is 43 years and their average monthly income is Rs.5,098. The respondent expressed that their prime occupation is fishing (98%) and the remaining two per cent work as labourers. About 61 per cent of the people respondents expressed that they are not aware about the oysters and mussel consumption and about 39 per cent are aware about it.

Most of the respondents (44%) have the knowledge of the medicinal uses of the products. About 57 per cent of the consumer preferred to buy the depurated meat, followed by with shell (36%) and meat (3%).

In this village 29 per cent of the people were consuming oysters and mussel, weekly while 61 per cent consumed occasionally. Most of the respondents (66% of the consumers) buy the oysters and mussels in the landing centers, while 17 per cent from fishers and 10 per cent from fish markets.

The consumer buy the mussel meat 600 gms at a time @ Rs 100 / Kg and most of the respondents (97%) averted that the mussels and oysters were not available throughout the year. Only 3 per cent of the consumers expressed that oysters and mussels are available always.

Most of the villagers (49%) expressed that of the mussel is available and 51 percent said that they are not available regularly. Most of the consumers (78%) preferred to have green mussel only and 100 per cent of the people prefer mussels in the form of curries and gravies.

All the respondents in their societies accepted to have mussels and oysters however no one in their village peoples reported any stomach pain or any other health issues.

Most of the villagers (91%) in their community consume mussels and 100 per cent of the villagers consumed mussels for their taste and cheap price.

Most of the consumers (98%) are not able to get the mussels and oysters in all markets. Most of the consumers (68 %) like to have fish only and 27% of the consumer like only mussel and the negligible proportion of less than 5 per cent of the people have either fish or mussels.

### 3. MOUTHVARAMKUPPAM

The average age of the fishermen is 39 years and their major occupation is fishing. They do not reveal the monthly income. All of them are aware about the oysters consumption and they have the knowledge of medicinal uses of the products.

The consumer preferred to buy the oysters with shell and the 62 per cent of the people respond that the consumers come to buy the oysters weekly basis. Most of the consumers (85%) procure the oysters in landing centers. During peak season they are ready to buy the oysters at a price of Rs 100/ kg.

The villagers prefer to buy the green mussels at a size of 50 gms and their society is accepted to have oysters and they do not face any health issues after consuming the oyster. The respondent said that 50% of the communities in their village consume the mussels and most of them (96%) prefer the mussel fries.

The respondent expressed that the villagers have no idea about the mussel pickles and soup and about 93 of the people in the village consume the mussels for taste purpose only and a negligible proportion of (less than 7%) of the people consume for the both medicinal value and the cost as the price of the mussels is very cheaper. Most of the consumers in (96%) the village likes fish only because of its high protein value.

## 4. CUDDALORE PERIYAKUPPAM

The average age of the fishermen is 48 years and their occupation is fishing. Their average monthly income is Rs.10,000. Most of the consumer (96% of the people) were not aware about the consumption of the oysters and only about seven per cent of the villagers are having the awareness.

Most of the consumers (96%) are not aware of the medicinal uses of the products and only less than a per cent have the knowledge about it. Most of the consumers (99%) prefer to buy depurated oyster. Almost all the consumers are occasional consumers of bivalves, while a proportion of less than a per cent of the people consume weekly and monthly.

Most of the consumers (99%) buy the products directly from the fishers and they said that the mussel is available always and they bought the mussels one kg at a time. The villagers prefer to buy the green mussels and their society is accepted to have a mussels and they do not facing any health issues after consuming the oyster.

Most of the respondents (99%) boiled the oysters and eat directly in their families. Everyone likes to have the mussels and they have not heard about the mussels pickles and soups. All the consumers of mussels expressed that they consume because of its taste. Almost all the consumers prefer fish to bivalves.



## 5. ALIKUPPAM

The average age of the fishermen is 43 years and their monthly income is Rs.4070/- and their prime occupation is fishing. Most of the respondents (91%) of the people are aware about the consumption of the oysters and clams. About 96% of the people responded that they prefer to buy the depurated clams and oysters and they have knowledge of the medicinal uses of the products.

Most of the people consume the clams occasionally at the size range, which varied from 25 to 55 gms. They bought the clams from the fishers directly. About 82 per cent of the consumer expressed the clams and oysters were available seamlessly and 98% of the consumers were said that they were ready to buy the clams available continuously. Most of the respondents (82%) expressed that the consumer prefer to have the bivalves in the form of gravies and the community is accepted to consume the clams and oysters.

The villagers ratified that the consumer did not have any other health issues after consumption and they said that they have not heard about the mussel pickle and soups., Most of the respondents (76% of the people) consume the clams and oysters for the taste and cheap price and the (76%) of the people in the village like fishes only because of the taste.

## 6. ALAMBARAIKUPPAM

The average age of the fishermen is 45 years and their occupation is fishing. The villagers responded that they were aware about the consumption of the oysters and they do not know the medicinal uses of the products.

Most of the consumers (89 %) preferred to buy depurated oysters and 81 per cent of the people consume the oysters occasionally, while 12 per cent consume it weekly. Ninety four per cent of the consumer are ready to buy the oysters at a cost of Rs 200/ kg.

Most of the respondents (100%) do not know the average quantity of the oysters bought at a time and the availability of the sources. Similarly they do not know the problems occurred after consuming the mussels.

About 63 per cent of the people in the community are consuming the mussels, while 81 per cent of the people like to have the oysters in the form of gravies and fries.

Most of the respondents (92%) was not aware of the mussels pickles and soups etc., and they responded that the oysters are available in all markets. The villagers preferred fishes to oysters.



## 7. KOTTAIKAADU

The average age of the fishermen is 44 years and their occupation is fishing their average monthly income is Rs.6,000. Most of the respondents (99%) in their village were aware about the oysters, mussels and clams subsequently they have the knowledge of the medicinal uses of the products.

All the consumers prefer to buy the depurated meat. Regarding the consumption about 98 per cent of the respondents were weekly consumers of mussels and oysters. The consumer buys the oysters and mussels directly from the fishers and 98% of the respondent said that the clams and mussels were available regularly. They buy on an average one kg of oysters at the cost of Rs 160/Kg.

The villagers responded that the society is accepting the consumption of mussels and oysters and they expressed that they did not face any other problems after consuming the products.

The villagers responded that they like to have the oysters and mussels in the form of curries and they have heard about the pickles and soups etc. Most of the consumers (74%) prefer to eat green mussels, followed by preference to clams (25%). People in their villages have not heard about the soups and pickles prepared from the mussels and oysters.

In this village most of the respondents said that the society is accepted to have the green mussels and oysters. Therefore villagers ratified that they have no problems after consumption of mussels /clams.

About 74 per cent of the respondents i.e. 700 peoples in their community consume mussels. Most of the respondent in their village people consumed oysters and mussels in the form of fries and curries.

Most of the consumers (95%) prefer oysters and mussels regularly due to their taste. About 88 per cent of the consumers procure oysters and mussels from the local fishers only. However, most of the respondents (86%) expressed that they prefer to consume mussels to fishes because of the taste, cheap in price and their availability. The remaining 14 per cent of the people preferred to have both mussels and fishes.

## 8. ARIYANKUPPAM, PUDUCHERRY

The average age of the fishermen is 45 years and their average monthly income is Rs.3,667. The major occupation in this village is labourers. Most of the respondents (95%) are aware of the clam consumption.

Most of the respondents (97% of the people) know the medicinal uses of the products. A minimum proportion of the less than a percent of the respondents preferred to buy the depurated meat of the clam.

The villagers stated that about 69 per cent of the consumers are occasional buyers of oysters while 10 per cent bought monthly and 20 per cent bought weekly. The respondents expressed that the consumers buy the clams at the cost of Rs 225/ Kg and the most of the respondent said that the source of the clam is not available continuously.

The respondents expressed that the society has accepted to have the clam and they declared that they did not face any problem after consuming the clam. They also told that they are not aware of value added products like mussel pickle or soup.

Most of the respondents expressed that in their family every one prefers to have clam and 47 per cent of the respondents said that they consume clams due to its taste and medicinal value. About 65 per cent of the respondents expressed that they prefer fishes to clams.

## 9. NONANKUPPAM, PUDUCHERRY

The average age of the fishermen is 39 years and their average monthly income is Rs.7,630 and in this village peoples primary occupation is in service sector namely masons and construction labourers. About five per cent of the respondents have the knowledge of clam consumption and the peoples in the village know the medicinal uses of the products.

About 66 per cent of the consumers buy the clams from street vendors and 22 per cent from fishers itself. The villagers expressed that the clams are not available continuously and the people prefer to have clams. Only less than a per cent of the village people is socially accepted to consume clams.

The villagers proclaim that they buy on an average 6Kg of clam at a time and the most of the respondents (98%) consume the clams occasionally. About 30 families in their village eating the clams, out of them 46 per cent consume clams curries, while 28 per cent like to take clam gravies.

Most of the respondents (98%) expressed that they have not heard about the value added products like pickles and soups extract form the clams. Most of the villagers consume the clams for their taste and the medicinal value on regular basis. In this village, most of the people (90%) prefer clams to fish (10%)

## 10. CUDDALORECHINNAKUPPAM

&

## 11. JAMEELABATH

The villagers are not interested in consuming or selling bivalves & therefore they are not interested on participating in the selling bivalves



## Interaction with fishermen and villagers



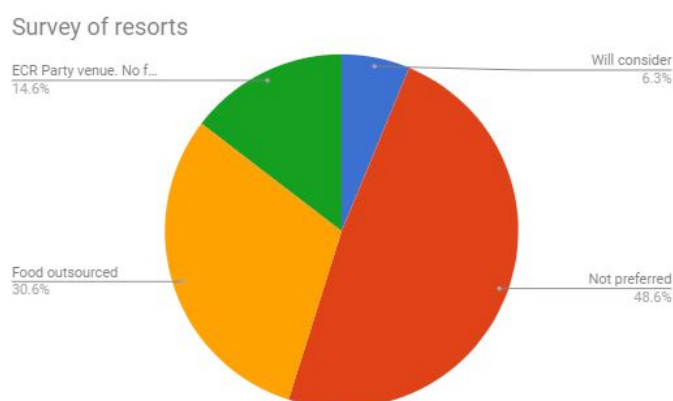
### 3. Estimation of market potential for bivalves: Survey of Hotels and Resorts

In the study area 145 resorts were surveyed in Chennai and Puducherry. Out of which only 10 (7%) were potentially interested to serve the oysters and mussels in their menu. Nearly 70 (48%) were not interested in serving bivalves. About 65 resorts (45%) were out sourcing these items. (Table 2 and Figure 1)

**Table 2 Details of Resorts Surveyed**

Sl. No.	Details	Number
1	Total resorts interviewed in the survey	145
2	Resorts potentially interested	10
3	Resorts not interested	70
4	Resorts outsourcing food	65

Figure 1 Survey of resorts



#### Status of bivalves serving in resorts

Most of the resorts serve bivalves in a limited quantity and at prescribed date or period only and does not show much interest in serving bivalve products to the customers. This can be due to the fixed menu maintained by most of the resorts, which again is due to limited customers. (Table 3 & Figure 2). Besides, the resorts prefer quick selling food. Resorts that tie up with corporate companies for team outings outsource food or setup small kitchens to make Chicken Biryani, Mutton rice, seasonal fish fries, Chicken fries for outings. Mussels are not preferred as resorts do not have any demand.



**Table 3 Reasons for limited supply of bivalves**

Sl.No.	Details	Number
1	Fixed menu	45
2	Lack of Customers	23
3	Pure vegetarians	01
4	Previous bad experience	02

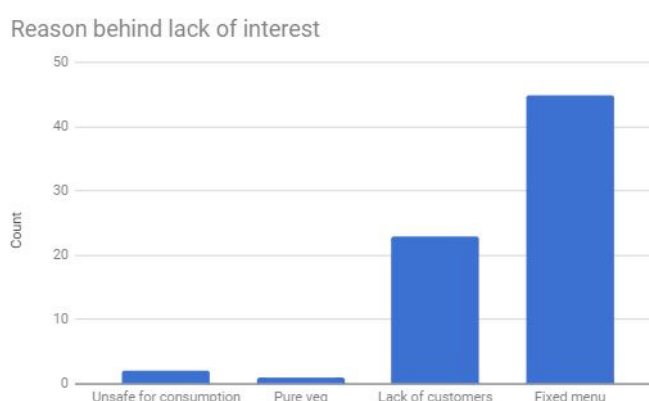


Figure 2 Reasons for lack of interest in serving bivalves

It was also found that two resorts namely Casurina Bay and VGP limit the requirement of mussels or oysters, whatever is available on request to once or twice a year. Customers have no prior knowledge of shellfish and tend to stick to known menus. The contact details of the resorts are given in Annexure-1

This was followed by a detailed survey of hotels selected in both Chennai and Puducherry. The hotels in Chennai and Puducherry were also surveyed. A total of 82 hotels were surveyed – 42 in Chennai and 40 in Puducherry. Out of this only six (14.1%) in Chennai and five (12.5%) in Puducherry served molluscs in their menu (Table 4) and Figures (3-6) The list of hotels surveyed in Chennai and Puducherry is given in Annexure-II and Annexure-III

**Table 4 Summary of results of hotels surveyed**

Sl. No	Details of Hotels Surveyed	Chennai	Puducherry
1	Number of hotels Surveyed	42	40
2	Number of hotels having molluscs in menu	6	5
3	Number of hotels not having molluscs in menu	36	35
4	Number of hotels not having but interested	12	8
5	Number of hotels interested in purchasing	18	13
6	Estimated quantity of molluscs purchased per month(kg)	525-560	80-92
7	Average size	(Sub-standard) 6cm size	(Standard) 6.1-9 cm size
8	Pricing of green mussel per kg (Min/Max/Average)	120/250/185	200/300/230
9	Pricing of oysters per kg (Average)	300	350
10	Hotels currently unsatisfied with supplies	4/6	1/5
11	Whether trend in bivalve meat	3/6 yes	1/5
12	Preferred quanta as	Shell	Shell
13	Majority Client background	Middle Income	Foreigners/ Indian tourists

It is important to note that 36 hotels in Chennai (86%) and 35 hotels in Puducherry (87.5%) do not have molluscs in their menu. This is a 50:50 Pessimistic: Optimistic situation. If tried seriously, there is scope to push in molluscs in the menu of these hotels (which of course depends on consumer preference). The supporting fact is that 18 hotels in Chennai (37%) and 13 hotels in Puducherry (27%) are interested to purchase bivalves/ bivalve meat to include in their menu. This section should be capitalized effectively to arrange for consistency supply of bivalves to these hotels.

Figure 3

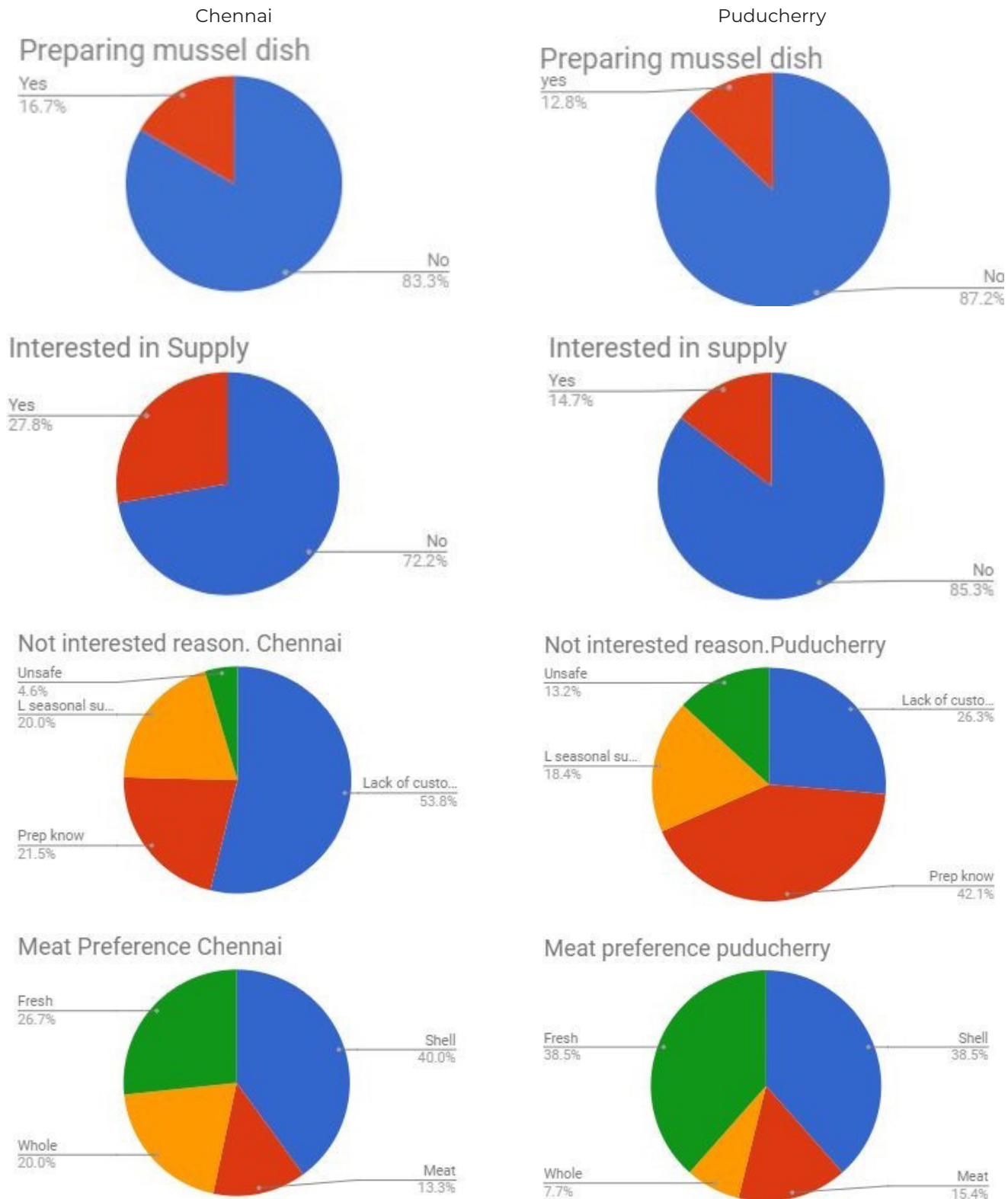
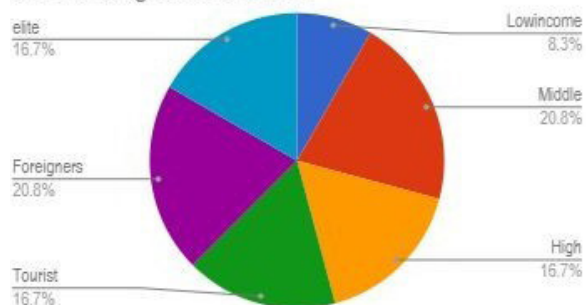
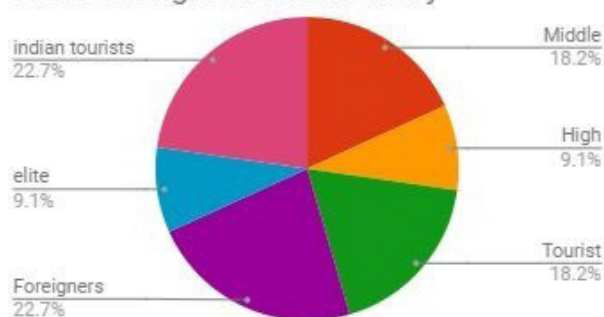


Figure 4

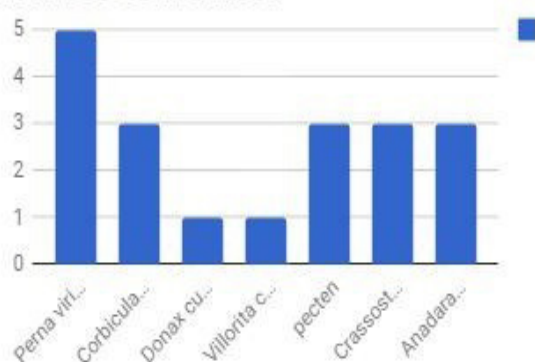
## Client background Chennai



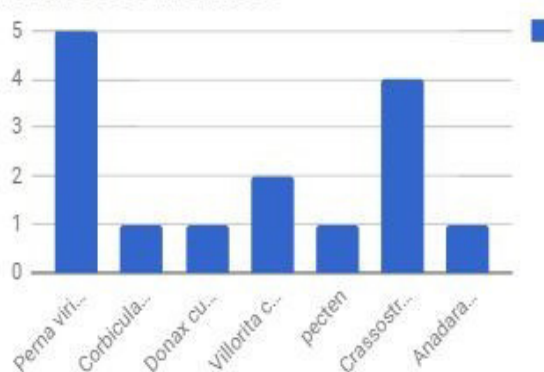
## Client background Puducherry



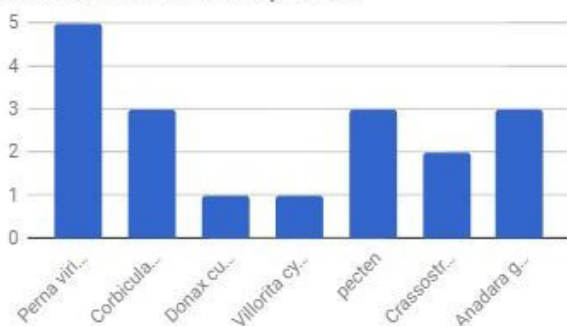
## Molluscs consumed



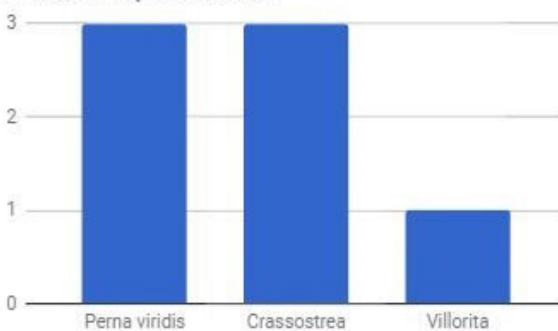
## Molluscs consumed



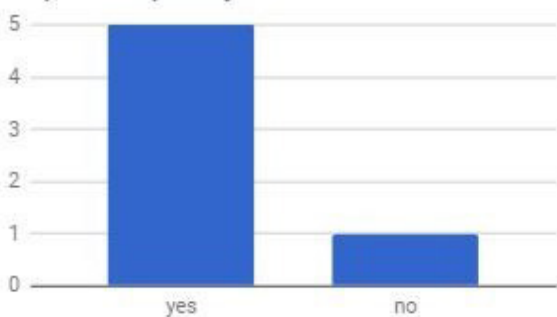
## What do consumers prefer?



## Consumer preference



## Scope for quality mussels



## Scope for quality mussels

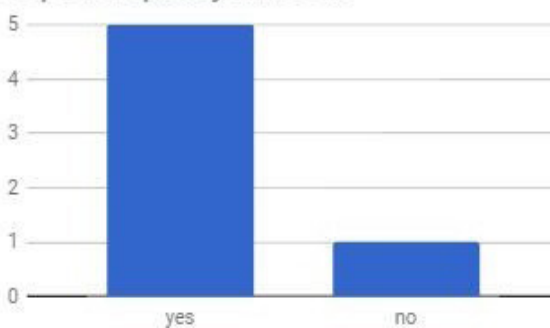


Figure 5

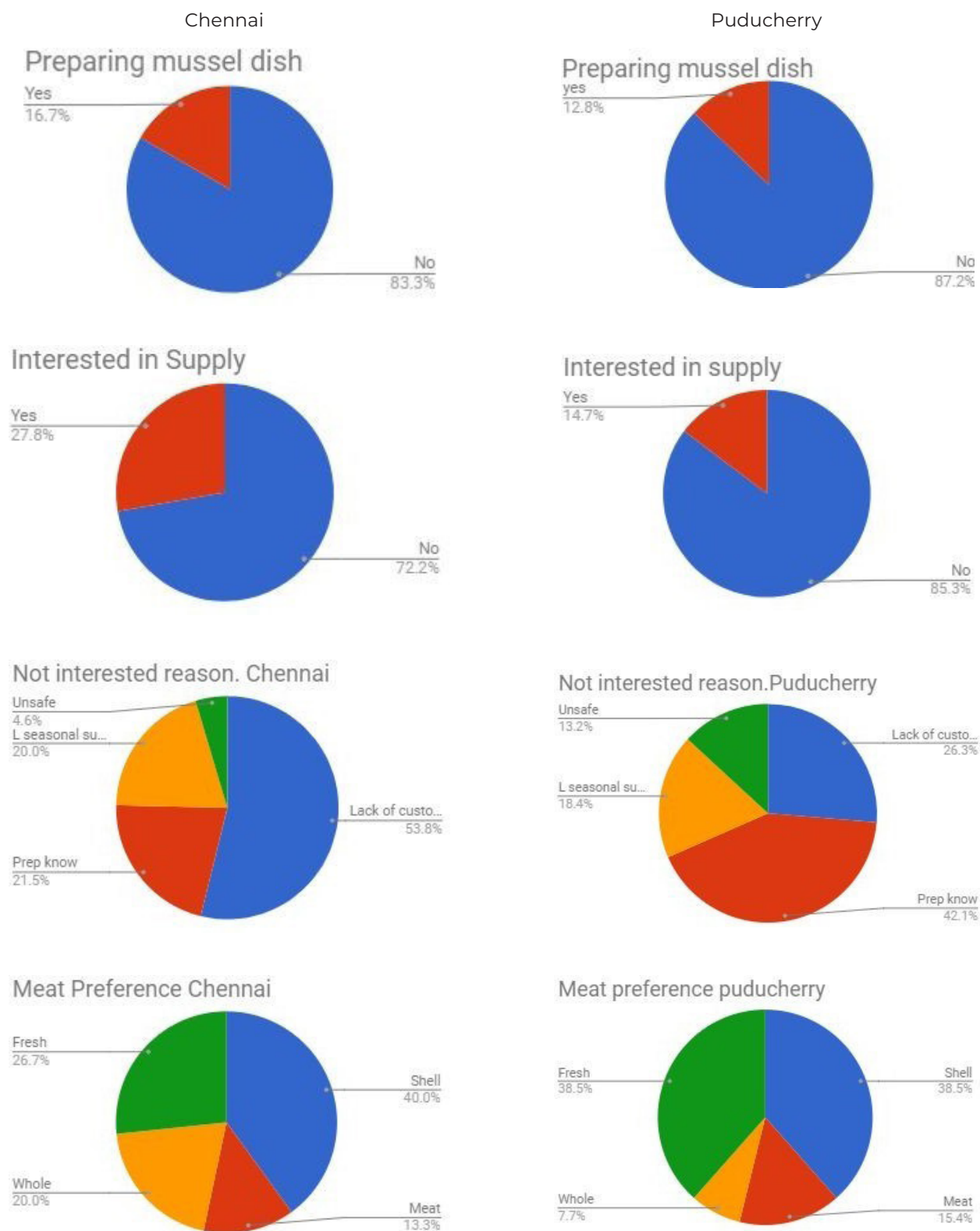
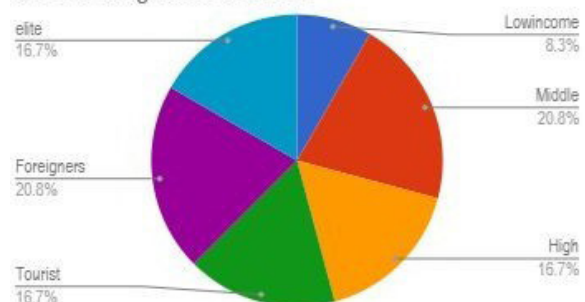


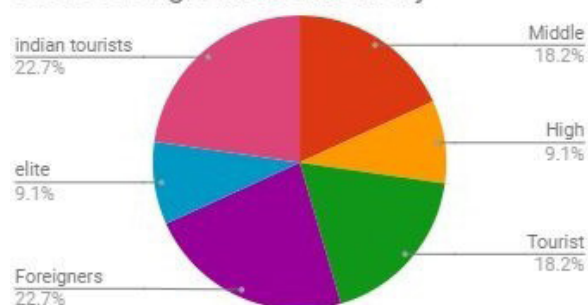


Figure 6

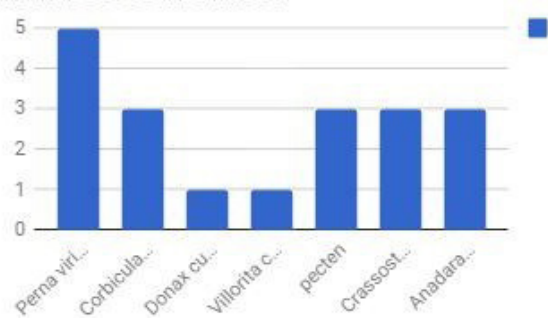
## Client background Chennai



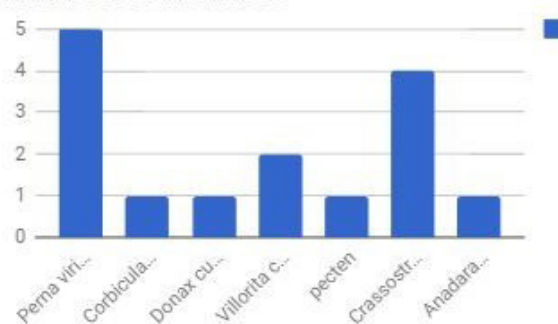
## Client background Puducherry



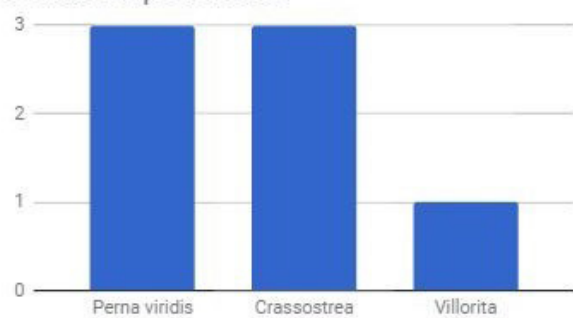
## Molluscs consumed



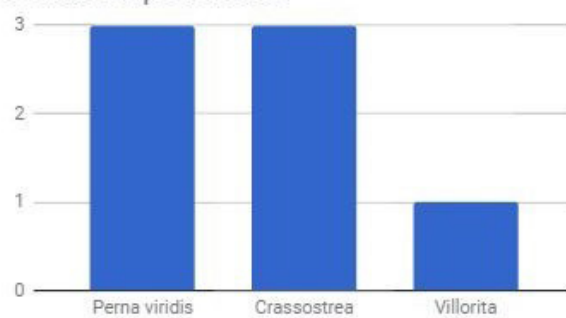
## Molluscs consumed



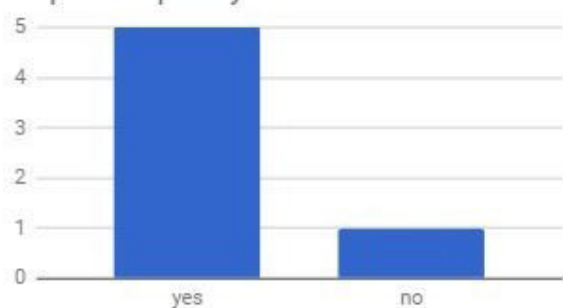
## Consumer preference



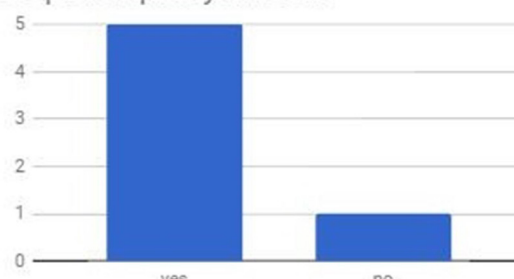
## Consumer preference



## Scope for quality mussels



## Scope for quality mussels



The estimated average purchase per month is 540 kg at Chennai hotels compared to about 90 kg at Puducherry hotels mainly due to the consumer preference in these two cities. The average size of mussel is about 6 cm at Chennai whereas it is 6-9 cm at Puducherry. The hotels at Chennai purchase green mussel at an average price of Rs.185/Kg while it was Rs.230/Kg at Puducherry. In case of oyster, the price per Kg ranged from Rs.300/- at Chennai to Rs.350 at Puducherry. The degree of satisfaction over supply of mussels (or) oysters is far from satisfactory as 5/6 hotels in Chennai and 4/5 hotels in Puducherry are unsatisfied with supply of bivalves.

The hotel in both the Centres prefer shell on bivalves only. Most of the clients to these hotels in both the states are foreigners 22 per cent and middle income Indian tourists (22 per cent). About 17 per cent of high income group at Chennai and 10 per cent at Puducherry visited these hotels to consume bivalves.

The estimated market potential for bivalves in Chennai and Puducherry is given in Table 5.

**Table 5 Estimated market potential for bivalves in hotels of Chennai and Puducherry**

Details	Chennai	Puducherry	Total
Number of hotels having molluscs in their menu	6	5	11
Number of hotels interested to have molluscs in their menu	12	8	20
Total number (potential purchasers)	18	13	31
Average quantity of bivalves purchased (estimated) per month per hotel	540 kg	90 kg	630
Total quantity of bivalves required per month	(18*540) 9,720 kg	(13*90) = 1170 kg	
Estimated market potential (demand) for bivalves <u>per month</u> for both Chennai and Puducherry	10,890 kg		
Estimated market potential (demand) for bivalves <u>per annum</u> for both Chennai and Puducherry	10.89 t *12 month 131 t		
Estimated market demand mussels and oysters	Oysters 73 t and Mussels 58 t		

It is seen from the table that the total market potential for bivalves worked out to 131 tonnes per annum. Out of this, the potential for oysters is estimated at 73 tonnes (55%) and mussels (45%). This gives a hope that there is scope to further increase the potential by increasing the awareness on the benefits of consumption of bivalves like mussels, clams and oysters in future.

Regarding the demand from outside markets, about 10 tonnes of oysters meat (valued at about Rupees 20 lakhs) is being traded off to Bangalore market and about 30 tonnes of mussel meat (valued at Rs.55.5 lakhs) is traded to Kerala markets per annum. These bivalves are harvested from Kovalam, Pulicat and Ennore. It was also observed that the hatchery industries are demanding (for broodstock maintenance and feed formulations) around 30 tonnes of oysters meat per annum, which may yield about Rs.50 to 55 lakhs.

Thus the total demand for bivalve meat comprising mussels and oysters are estimated at 201 tonnes comprising 113 tonnes of oysters meat and 88 tonnes of mussel meat. The estimated value of the bivalves worked out to Rs.5.02 crores comprising Rs.3.39 crores of oysters and 1.63 crores of mussels at the point of final finishing and retail market levels. The positive aspect of this study is that , there is a scope to further increase the earnings if there is an improvement in the presentation, processing, packing, advertising and more awareness campaigns on the benefits of consuming bivalves. Such a move will also promote the livelihood security of the coastal population besides ensuring the nutritional security of the nation.

## Bivalve Recipes Served In Hotels / Resorts In Chennai





## Hotels and Resorts surveyed for studying market demand



PASTA (Choice of Penne & Spaghetti)	
Alfredo Pasta (Seafood and pasta cooked with homemade béchamel sauce)	Rs 140
Seafood Marinara (Squid & Prawns cooked with homemade marinara sauce)	Rs 160
Fruits di mer (Prawn, Squid, Fish cubes seared with white wine and parsley)	Rs 170
RICE & CURRIES	
Steamed Rice	Rs 50
Herb Butter Rice	Rs 80
Seafood Fried Rice (Our signature fried rice wok-tossed with prawns, squid and fish)	Rs 140
Special Fish Briyani (Chef's special fish briyani served with malha and ghee)	Rs 150
Prawn Briyani (Delicious prawn briyani cooked with south Indian spices)	Rs 160
Coastal Fish Curry (Fidilicious special fish curry with malha. Served with steamed rice)	Rs 170
Fish Head Curry (Head of Red Snapper / Seer Fish / Sea bass / Tressily steamed in south Indian curry with assorted vegetables. Served with steamed rice)	Rs 170
CRUSTACEANS (Subject To Availability)	
Crab Masala (Crab cooked with chettinad masala)	Rs 240
Mussels (Mussels cooked with white wine and garlic butter)	Rs 250
Oysters (Fresh oysters tossed with hot chilly seasoning)	Rs 280
ACCOMPANIMENT	
Idlis ( 4 nos )	Rs 40
Idiyappam ( 4 nos )	Rs 40
Chapattis ( 2 nos )	Rs 40
Seafood Kaldosa	Rs 80







## Annexure - I

## List of Resorts

Sl. No.	Name of the Resorts	Address	Name	Contact number	E-mail
1	Green Meadows Resort	4/364 A, Anna Salai, Palavakkam, Chennai, Tamil Nadu 600041	Kamal	9789928617	info@greenmedowsresorts.com
2	MGM Beach Resorts	1/74, E Coast Rd, Muttukadu, Chennai, Tamil Nadu 603112	Dominic	8754412592	am@mgm-hotels.com
3	The Country Club Jade Beach Resort	No. 107, 211B, ECR Road, Near Crocodile Park, Vadanemelli Village, Chengalpet Thaluk, Chennai, Tamil Nadu 603104	Sathish	9282552888	foodandbeverage@jaderesorts.com
4	Green coconut resorts	#58/1, East Coast Road, Near Mahabalipuram, Muttukadu, Chennai, Tamil Nadu 600020	Nanda	9841055600	marketing@greencoconut.net, sales@greencoconut.net
5	Grande Bay Resort And Spa	ECR, Kovalam Road, Mahabalipuram, Tamil Nadu 603104	Samuel	9840793960	sam@grandebayresort.in
6	Radisson Blu Resort Temple Bay	531, GST Road, St. Thomas Mount, Chennai, Tamil Nadu 600016	Makendra kumar	9940455469	makendra@radissongrt.com
7	The Windflower Resort and Spa Pondicherry	SurveyNo.198/1, 19 8/2, Manavely Revenue Village, Maraimalai Adigal Street, Chinnaveeram Pattinam, Ariyankuppam Post, Puducherry, 605007		9952965866	reservations.chennai@thewindflower.com
8	Confluence Banquets and Resort	ECR - OMR Junction ECR, Poonjeri, Mahabalipuram PO-Kanchipuram, Chennai, Tamil Nadu 603104	Rajesh exchef	9500027569	fourpoints.mahabalipuram@fourpoints.com

9	Dune Eco Village and Spa	70, East Coast Road, Pudhukuppam, Keelputhupet,, Via Puduchery university, Puducherry, Tamil Nadu 605014		9159550343	booking@dunewellnessgroup.com
10	Chariot beach resorts	Five Rathas Road, Behind Five Rathas Monument, Mahabalipuram, Tamil Nadu 603104	Subbaya	9444992702	resv@chariotbeachresorts.com
11	Hotel House Boat Resorts	No.1B/4- E.C.R, Elanthoppu,near Tiger Cave, Mamallapuram- 603104,Tamil Nadu, South India			tunhotelhouseboatresorts@gmail.com, tunhouseboatresorts@gmail.com

### List of Hotels in Chennai

SL No.	Name of the Hotels	Name	Contanct number	E-mail
1	Marina	Nassem	9884396213	no email
2	Benjarong	Ramkumar	9840795204	ceo@orientalcuisines.in
3	Aristos	Samuel	9042067271	info@aristoschennai.com
4	Fisalicious	Cardin Ruby	9962672888	<a href="https://www.facebook.com/fisalicious">https://www.facebook.com/fisalicious</a>
5	Raintree	Tamoghna	9677253380	mail@raintreehotels.com
6	ITC	Ajit Bandera	8754401782	reservations@itchotels.in
7	Illusions	Amarnath	9840269000	<a href="https://www.facebook.com/Illusionsmadras/">https://www.facebook.com/Illusionsmadras/</a>
8	Absolute barbeque	Prosenjith	9301469001	ceo@absolute-barbecue.com
9	Yaki restaurant	Anbarasu	7550255888	no email
10	Dahlia	Revathi	4428265240	no email
11	Kuuraku	Saravanan	30853866	no email
12	Zaitoon chain	Shaji	7299969989	info@zaitoonfoods.com
13	Fisherman's fare express	Mohammad Rafi	9840029204	no email

14	Thai food house	Ciro Cattaneo	9791038337	thaifoodhousech@gmail.com
15	Paprika-Courtyard Marriott	Sanjeev	7338836322	no email
16	Coastal Aroma Seafood	Rajan S	9944802023	Coastalaroma@gmail.com
17	Crimson Chakra	Ramesh	7845335150	info@crimsonchakra.in
18	Lotus the park	Malar mannan	8939425515	malarmannanb1@gmail.com

### List of Hotels in Puducherry

1	Tulip	Vasanth	9597084996	cvj.vasanth@gmail.com
2	Golden Dragon - Hotel Le Royal Park	Deepan 38	9787065238	deepan23.23@gmail.com
3	MaisonPerumal	sam john	9488009576	samjohn@cgheirth.com
4	ThhevuPlage	Shiva	9600777038	none
5	Prawn and Crab	sampathku mar	8870501234	aecpdy@gmail.com
6	Villa Krish	Shakthivel 40	9943304121	reservation@villakrish.com
7	Margaritas	Manoj Kumar	8754154108	manojkumar18@gmail.com
8	Rendezvous	Jessica Mathias	9443220737; 9629978402	rendezvouspondy@gmail.com
9	The Promendae	Satish	4132227751	chefpromande@hidesign.com
10	Sakura Sushi	Egle	9488047368	sakurasushi@auroville.org.in
11	A La Carte	Selvaraj	0413 2349033	info@ajanthaseaviewhotel.com
12	Le Club		8012820092	contact@hoteldepondicherry.com

### List of Online Distributors

Sl. No.	Name of the Distributors	Service	Name	Contact Number
1	Seafood online	online	Sabari 30	
2	Buyfish online	online	Harki Krishna	9840372262
3	Supreme seafoods	online	Mohammed	044-42184320
4	Chennai sea foodspot	online	Thanga Raj	9841507007





## Annexure-II

### List of Hotels surveyed in Chennai

Sl. No	Name of Hotel	Location	Whether Oysters in Menu	Cuisine
1	Aristos	Adyar	yes	Cont, Seafood, Med,
2	Crimson Chakra	Adyar	No	S.I, N.I, Cont
3	Benjarong	Alwarpet	sometimes	Thai
4	Absolute thai	Alwarpet	No	Thai, Asian
5	Tangerine	Alwarpet	No	Ita, American, Cont
6	Thai food house	Alwarpet	No	Thai
7	Chap Chay- Raintree	Alwarpet	yes	Ch, Malays, Thai
8	New Seoul Hotels	Alwarpet	No	Korean
9	Sahi cafe	Amanjikarai	No	No
10	Asian Station	Anna Nagar East	No	Asian
11	Southern Chinese rest	Anna Nagar East	No	No
12	Chopp n stix	Ashok Nagar	No	No
13	Fishalicious	Basant Nagar	yes	Seafood
14	Fisherman's Fare Xpress	Basant Nagar	No	Seafood, Chetnad
15	Zaitoon	Chain	No	N.I, Ch, Ara, BBQ, Mughlai
16	Fisherman's Fare	Egmore	No	No
17	Va pho-Asian canteen	Gopalapuram	No	Asian
18	itc grand cholai Pan Asian	Guindy	yes	Asian
19	Young doo rest	Kotturpuram	No	Korean
20	Anchor rest	Mogappur	No	No

21	Savory Sea shell	Multi	No	Ara, Ch, N.I, S.I
22	Mainland China	Multi	No	Chinese
23	Illusions Pub	Mylapore	No	N.I, Cont, Ch
24	Nasi And Mee	Nungambakkam	No	Singa, Malaysi, Ch, as, thai
25	The Marina	Nungambakkam	yes	N.I, Ch, seafood
26	Dahlia	Nungambakkam	No	Japanese
27	Lotus the park	Nungambakkam	No	thai
28	Swiss Hutte	Nungambakkam	No	No
29	Ink 303	Nungambakkam	No	No
30	Rangis	Nungambakkam	No	No
31	Opal inn	Nungambakkam	No	No
32	Red Box	Nungambakkam	No	No
33	Canton	Nungambakkam	No	No
34	Yaki Noodle Bar	Perungudi	No	Chinese Korean, Thai
35	Bay 146	Rksalai	No	Cont, Ch, Ita, Ind, Leb,
36	Buzz- gateway hotel	Sholinganalur	No	No
37	Famous theory	Sholinganalur	No	No
38	Grill Box	T. Nagar	no	N.I, Ch, Cont, Seafood
39	Cheong kiwa	Teynampet	no	Japanese, Korean
40	Paprika- Courtyard Marriott	Teynampet	yes	N.I, S.I, Cont, Ch
41	10 D	T Nagar	no	N.I, Ch, Cont
42	Kuuraku	Vadapalani	no	Japanese
43	Absolute bbq	T Nagar	no	Barbeque