



Buying fish at a Madras market

PART B

FISH CONSUMPTION:

FINDINGS OF QUALITATIVE RESEARCH

A qualitative study was carried out from 25.10.91 to 31.10.91, after the quantitative research was completed (see Part A). The latter, of course, provided most of the guidelines for its execution. In particular, attitudinal aspects of consumer response, impossible to derive clearly from the questionnaire, were probed. Moreover, an attempt was made to identify areas of real dissatisfaction, current needs and scope for improvement through intervention by either public or private sector agencies.

10. ATTITUDES TO FISH

A major objective of this research was to discover consumers' attitudes to the consumption of fish. However, it would be pertinent to examine first the critical needs and concerns in the area of foods in general, then to those pertaining to vegetarian and non-vegetarian foods, and, finally, to the specific perceptions relating to fish. Such an overview would help in understanding the reasons for a high level of involvement with certain foods and the inhibitions related to other foods.

10.1 Classification of foods by needs and expectations

In order to understand the basis on which consumers classify various foods, consumers were asked to list all the foods that they consume and these were to be grouped according to dimensions they considered critical. The outcome of such an exercise revealed that taste, nutrition and the occasion or frequency of consumption are the critical dimensions. In other words, consumers perceive that foods could have different properties in relation to taste, nutrition or occasion.

10.1.1 TASTE vs NUTRITION

Consumers across all income groups unanimously agree that taste is the major consideration in planning a menu or a meal — be it for every day consumption or a special occasion. While the need to fulfil nutrition requirements, especially of the children and men, is considered important, consumers are nevertheless of the unanimous view that even though a food may be nutritive, if it fails in terms of taste, there is little purpose in buying or preparing it. Housewives choosing nutritive food say care is taken to prepare it in a tasty manner.

10.1.2 HEALTH CONCERNS

There appears to be an increasing concern for **health** among consumers, not only among the educated elite, but also among the lower income, illiterate consumers. While all consumers are aware of the unhealthy qualities of certain foods, middle and upper income consumers are also aware of the specific reasons why certain foods are considered unhealthy. The most common concern is related to the consumption of fatty foods, which are associated with an increasing incidence of high blood pressure, cholesterol and heart diseases.

Some consumers have graduated to a level where, in addition to ensuring taste and nutrition, an attempt is also being made to plan a wholesome and balanced diet. In other words, vegetables are included for their perceived vitamin content, wheat or rice for their carbohydrates, non-vegetarian food to stimulate growth, milk and eggs for calcium, pulses for proteins and so on.

10.1.3 ECONOMY

Among lower and middle income consumers, the need for economy is far more pronounced. The unit price, as well as the shareability of food, are critical for these consumers. The staple food, rice, is viewed as a stomach filler and the side dishes — curry or *sambar* (gravy) — are primarily meant to enable the person to consume a lot of rice. In other words, side dishes are merely taste additives. At the same time, it would be wrong to assume that these low income consumers are unaware of the need for nutrition or the nutritive value of certain foods. Affordability is the prime reason for their existing practices.

Even among low income consumers, there are two segments. One segment comprises of those who give economy and unaffordability as the reasons for eating the food they do and are resigned to consuming food which is not very nutritive. There is another segment which holds that, despite their poor economic status, their nutritive needs are met. The argument of these consumers is that nutritive food is not necessarily expensive. Some of the examples cited are spinach, leaves of the drumstick tree (which is grown in most neighbourhoods), the pith of the plantain tree, the tiowerettes of the plantain tree, eggs etc. They also believe that if only a person is willing to spend time looking for alternatives, there are many less expensive ones available. To upper income consumers, however, these options are not only uninteresting and difficult to emulate, but also not very status enhancing.

10.2 *Perceptions relating to vegetarian food*

Consumers' perceptions of vegetarian food are, to a large extent, positive. They generally consider 'vegetarian' to be all that is **not** 'non-vegetarian'. But in the context of comparing non-vegetarian and vegetarian food during the survey, only those foods which could substitute non-vegetarian foods were taken into account, *si.* vegetables, curd and, among the lower income groups, pulses.

It was found that the lower the income, the greater the substitution of fish for vegetables, curd, pulses etc. Among the middle and upper income groups, on the other hand, there is a felt need to include some such 'vegetarian' foods, even when fish or mutton is cooked. But a view largely expressed is that "when non-vegetarian is made, no one touches vegetables or *dal* or curd".

The positive and negative aspects of vegetarian food in the eyes of the consumers were:

Positive perceptions	Negative perceptions
* Essential ... Critical component of a balanced diet	* Does not fulfil nutrition needs completely
* Healthy to consume	* Taste not gratifying (to adults)
* Cheaper than non-vegetarian	* Vegetarian cooking more elaborate
Relatively easy to digest	* Lacks status

10.3 Perceptions relating to non-vegetarian food

In addition to fish, three other non-vegetarian foods were assessed in this research. viz. mutton, chicken and eggs. (Note: beef is not commonly consumed due to religious sentiments and pork is avoided following negative propaganda and also religious sentiments.)

The positive and negative assets associated with each are:

MUTTON

Positive perceptions

- * Tasty
- * Nutritive
- * Easy to prepare
- * Status-enhancing

Negative perceptions

- * **Expensive (especially for lower and middle income consumers)**
USER IMAGERY : Businessman. Wealthy.
- * High fat content (of particular concern to upper income, heavy consumers)
USER IMAGERY : "increases cholesterol level in blood": "undesirable for diabetics".
- * Not easily digestible
- * Cooking time is longer

CHICKEN

Positive perceptions

Across groups perceived to be:

- * Tasty
- * Easy to prepare
- * More affordable than mutton
- * Status-giving

Among middle and tipper income groups:

- * *Less fat content*
- * *Next best to fish*
- * *Good for BY., heart disease.r and diabetes*
- * *ideal for entertaining guests*
- * *'has an intrinsic taste*

Negative perceptions

Low income groups perceive it as:

- * Expensive
- * Outlay felt to be more

Upper income groups feel it is:

- * Not easily digestible
- * Heat-producing

Other perceptions:

- * *Has to be avoided in summer* (upper income)
- * *Cannot be kept for the next day*' (lower and middle income)
- * *Could be poisonous if not cleaned properly*' (upper income)
- * *Requires a lot of oil to fry*' (middle income)

EGGS

Positive perceptions

- * Liked by children across groups

- * Health benefits

“Simplest way of making available nutrition” (lower income)

“Can even be given to the sick” (low income)

“A must for growing children advertisements say so” (middle income)

“Rich in proteins, vitamins, calcium” (upper income)

- * Convenient

“Easiest to cook”

“Can be prepared in many ways”

Negative perceptions

- * No negatives associated across groups

- * Can only serve as a side dish

“No mess, no smell”

“Affordable”

10.4 Perceptions relating to fish

Some of the responses of consumers, across all income groups, are quoted below to highlight their perceptions of fish as a food item.

Low-income consumers:

“Fish is good for health - has calcium, purifies blood”

“Small fish are nutritious”

“Shark is good for lactating mothers”

“Medicines are made from fish oil”

“Good for the eyes - especially Sardine”

“Indian salmon is good for B.P.”

“Crab is advised for colds”

Middle-income consumers:

“Fish has high oil content”

“Can prevent, cure many diseases

“Crab for colds, eosinophil primary complex”

“Good for colds, lactating mothers”

“Rich in vitamin-A, calcium, protein”

Upper-income consumers

“Small fish is tasty also good for health doctors advise us to eat small ones”

“Has Vitamin-A”

“Can substitute carrots, greens

“Contributes to good eyesight, long hair ..and brains”

“Fish can even help reduce weight”

“Has a taste of its own”

“Rich in protein, calcium

10.5 Motivations to consume fish

Consumers were asked about the factors that motivate consumption of fish, The findings, as the consumer perceptions in the earlier section reveal, are similar to the quantitative study.

Among lower income groups, the main motivators for consuming fish are:

- | | |
|--|-----------------|
| Taste | * Affordability |
| Economy | |
| Economy benefit is as it serves as the main and side dish and does not require expensive ingredients). | |

Among middle and upper income groups. in addition to the above, the following motivating factors were stated:

- | | |
|--|-----------------------------|
| * Do-good benefits | Easy digestibility |
| * Ease of preparation (short cooking time) | Safe (non—fatty) to consume |

10.6 Barriers to consuming fish

Among lower income groups there are practically no barriers, except for such minor objections:

- | | |
|--|-----------------------------------|
| * Resistance by children due to smell or bones | |
| Likelihood of causing skin allergy | * Heat producing tendency |
| * Lack of status benefits | * Time consuming cleaning process |

Among middle and upper income groups, major inhibiting factors are:

- | | |
|---|--|
| * Bones in the case of small and inexpensive fish | * Smell while cleaning (disliked by consumer as well as by neighbours) |
| * Cleaning process time-consuming | * Poor hygiene standards in fish markets |
| * Health hazards | * Certain types can cause diarrhoea |
| * Heat producing | |

10.7 Comparative rating of non-vegetarian foods

An attempt was made to get a comparative evaluation of all non-vegetarian foods in terms of dimensions that consumers perceived as critical:

<i>Dimensions</i>	<i>Fish</i>	<i>Eggs</i>	<i>Mutton</i>	<i>Chicken</i>
Tasty		++		+++
Economical!				
Affordable	++++	+++	—	+
High nutritive content	+++	++	+++	+
** Status-enhancing	—	+	++++	
Easy to digest	+++	C++	+	+
Easy to clean	+	++++	++++	
Cooks faster	++++	+++	+	
Has an intrinsic taste	++++	+	++	+++
Healthy food	+++	++	+	++
Can be given to infants/children	+++	++++	—	+
Non-fatty. low on cholesterol	+++	++++	—	++
Easily accessible	+++	++++	+++	+++
Rich in vitamins	++	+	+—	+
Rich in proteins	+++	+	'S'—	.4—
Rich in minerals	—	+—	+	4'—
High calcium content	+—	++	+—	
High iron content	++	—	+	+
No wastage involved	—	++++	++++	++
Stimulates growth	++	++	++++	++

** Most critical dimensions: +++++ Very good +++ Good: ++ Somewhat good; + Fair: — Poor; + Ambivalent

11. PERCEPTIONS RELATING TO VARIOUS TYPES OF FISH

The quantitative component of this research clearly indicates that consumers in Madras are aware of a number of varieties of fish. During the second part of the research, an attempt was made to understand consumers' awareness of the taste, physical characteristics, nutritive value, price and availability of the various types of fish available. It became clear that consumers are aware of as many varieties as indicated by the quantitative research and sometimes even more. Housewives could effortlessly verbalize the motivations and deterrents for the purchase and consumption of the various types. The research also indicates that lower income consumers are not only aware of many more varieties but also have knowledge about the characteristics of each. In addition to seafish, some housewives, those originally from non-coastal districts, are also aware of freshwater fish.

11.1 Awareness of types

Since the extent of awareness varies not only across income groups but also within each group, an income-wise analysis as well as the degree of awareness are presented in the following table:

AWARENESS OF TYPES

Species	Monthly household income				
	<Rs.500	Rs.501- Rs.1000	Rs.1001- Rs.2000	Rs.2001- Rs.4000	Above Rs.4000
Seer	H	H	H	H	H
Bream	H	H	H	H	H
Anchovy	H	H	H	H	H
Shark	H	H	H	H	H
Pomfret	H	H	H	H	H
Whitefish	M	M	M	M	L
Mackerel	M	L	NA	NA	NA
Seaperch	H	H	H	H	H
Goatfish	H	H	H	H	H
Sardine	H	H	H	H	H
Ribbonfish	H	H	H	H	H
Lizardfish (Saurida sp)	M	M	M	M	L
Catfish	H	H	H	H	H
Silverhellv	H	H	H	H	H
Horse mackerel (Carangids)	M	M	M	L	NA
Indian salmon (Polynemids)	L	L	L	L	NA
Sole/Flaifish	M	L	M	L	M
Ray	A	L	M	L	M
Eel	H	NA	H	H	H
Tuna	L	M	L	M	M
Barracuda	M	L	H	M	L

H = High awareness: M = Medium awareness: L = Low awareness: NA = No awareness

11.2 Perceptions relating to types of fish

The group discussions revealed that at least a few consumers in every group claimed to have knowledge about each type. Further, barring a few, men, as a category, appeared to have little knowledge about the appearance, taste and nutritive value of fish. At best, men were able to authoritatively discuss a few popular varieties. A discussion of purchase habits revealed that even when men were involved in the purchase, it was not on a regular basis. Further, men 'played it safe' by confining their purchase to a select few types of fish. This explains why there is little opportunity for men to have a good knowledge.

Among housewives, too, there were some who admitted ignorance, which was partly because of their relatively low involvement with fish or because they had older women in the house to help them in buying, cleaning and even preparing the fish.

The tables that follow highlight consumer perceptions relating to each type of fish.

PERCEPTIONS RELATING TO TYPES OF FISH

Types	Perceptions relating to			Involvement and consumption	Preparation
	Product	Price	Availability		
Seer	Tastiest Has one bone Fleshy Does not smell Easy to clean and cook Nutritious	Expensive Not affordable by all	Easily available Status-enhancing Occasional, by low and middle income groups	Liked by children	Curry Fry
Bream	Tasty Fleshy Not many bones Easy to prepare Good value	Cheap, affordable	Easily available	High across groups Regular consumption	Curry Fry
Anchovy	Aware of white Anchovy only Tasty Few bones Big and small	Cheap	Available	Moderate involvement	Curry
Shark	Tasty Few bones (“eating is a pleasure”) Has closed gills	Costly	Available in plenty	Muslims do not consume this Lactating mothers consume this Good for stiff joints High involvement	Curry Puttu Cutlets

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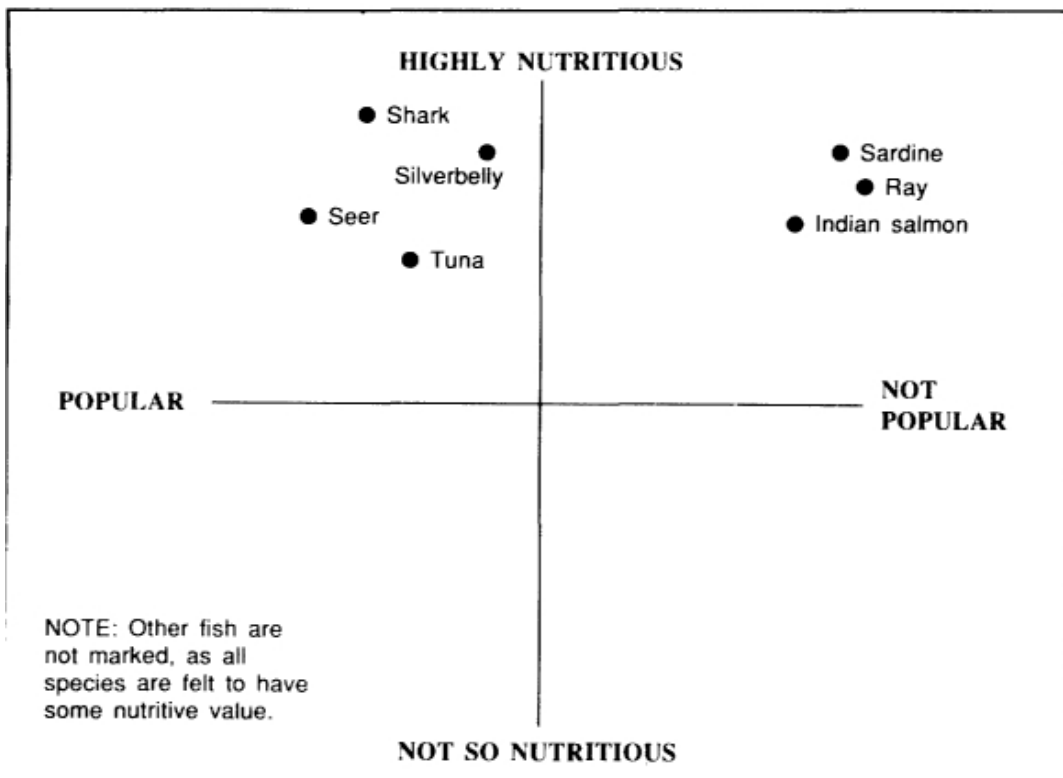
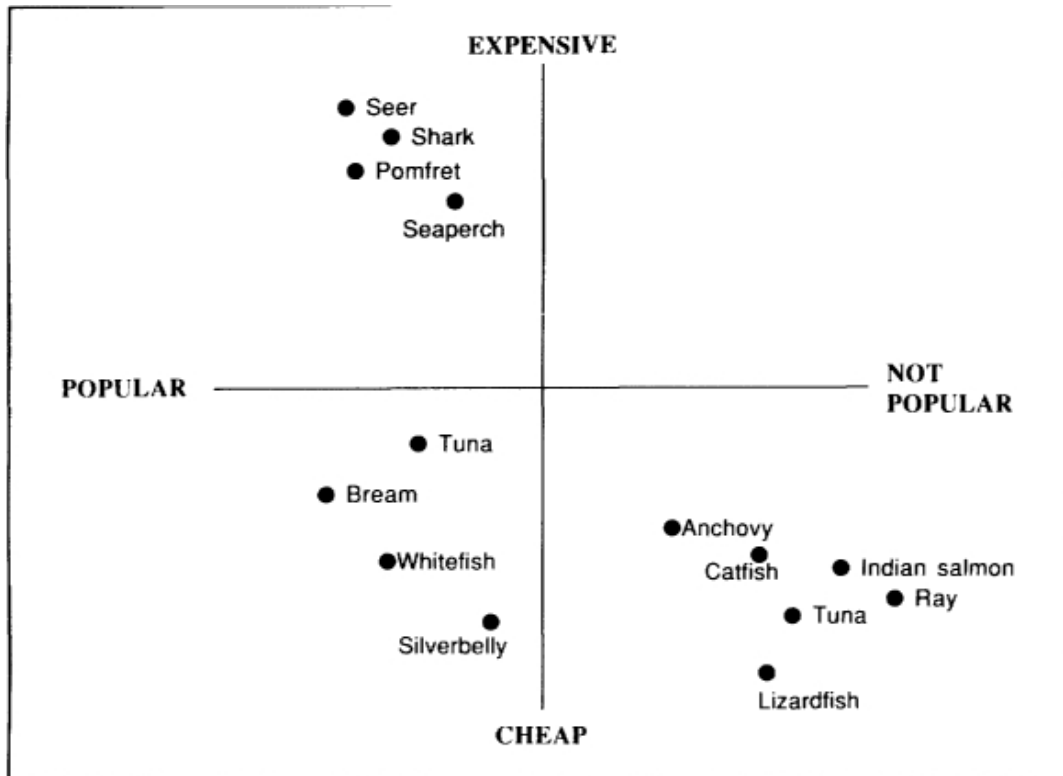
<i>Types</i>	<i>Perceptions relating to</i>			<i>involvement and consumption</i>	<i>Preparation</i>
	<i>Product</i>	<i>Price</i>	<i>Availability</i>		
Pomfret	Tasty No wastage Few bones Easy to clean Does not smell	Expensive	Available	Preferred Occasional consumption	Curry Fry
Whitefish	Tasty Easy to clean Few bones	Cheap	Easily available	High among low income groups	Curry
Mackerel	Tasty	Cheap	Available	Bought only by low income consumers	Curry Fry
Seaperch	Few bones Tasty Fleshy Difficult to clean	Costly	Available in plenty	-	Good for frying Also for curry
Goattish	Tasty Red colour Looks like Bream Not many bones	Moderate	Available	High Consumed by all	Curry
Lizardfish (Saurida sp)	Round shape Lots of bones Small fish	Cheap	Easily available	Not a favourite	Curry
Catfish	Quite tasty Lots of bones Smells a little Has feelers	Cheap	Not common	Not high "Affects the stomach"	
Silver-belly	Small fish Tasty Lots of bones	Not costly	Available	Liked by consumers '-for colds '-post-delivery	Good for curry
Horse mackerel (Carangids)	Few bones Tasty	Costly 10 Rs/fish	Available in plenty	A preferred variety	Curry

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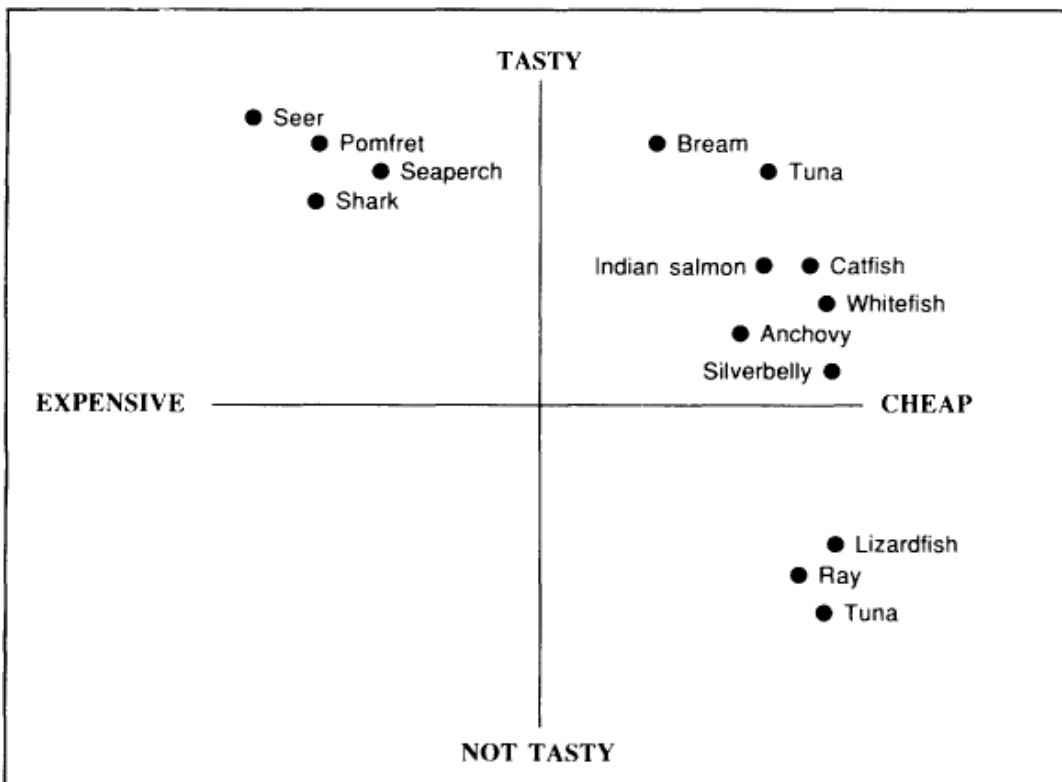
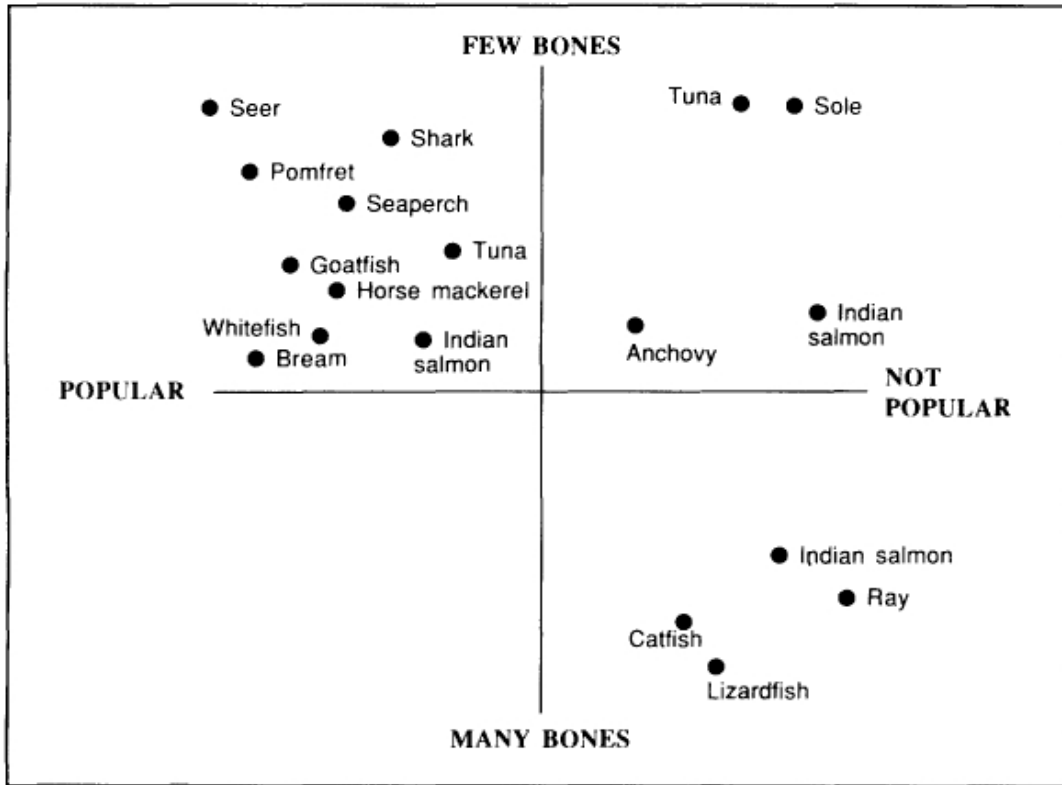
<i>Types</i>	<i>Perceptions relating to</i>			<i>Involvement and consumption</i>	<i>Preparation</i>
	<i>Product</i>	<i>Price</i>	<i>Availability</i>		
Indian salmon (Poly-nemids)	Tasty Good for health. esp. colds Few bones	Costly — 15 Rs./pair	Available	Not high -	
Sole/ Flatfish	Two kinds: heavier one is tasty No bones Flat, pink fleshy, slippery	Reasonable	Available	Not high	Good for frying
Ray	Lots of bones Round, like a shark Strong odour Good for health	Cheap	Available	Not popular	
Eel	Appears like a snake Bad odour Freshwater High fat content	Cheap	Available	Very low Not popular	Curry
Tuna	Not tasty Bad odour Looks like Seer Flesh is red Hard like meat Passed as Seer	Cheap	Easily available	Not popular -	
Barracuda	Freshwater fish Tasty Long, sharp ends Difficult to clean Few bones	Cheap 3 Rs./heap	Available	Not high	Suitable for curry

11.3 Perceptual charts of fish

An attempt was also made to elicit consumers' perceptions relating to the relative strengths and weaknesses of the types of fish they were aware of. A few critical dimensions were selected and consumers were asked to rate the fish according to these dimensions. The results of such an



exercise are plotted on the perceptual charts which follow. It would be pertinent to mention here that the points are decided upon on the basis of consumer perceptions rather than on any quantitative data.



11.4 Perceptions relating to Crab

<i>Perceptions</i>	<i>Benefits</i>	<i>Barriers to usage</i>	<i>Usage practice</i>
Small and big sizes and sea and pond varieties felt to be available: sea type felt to be tastier	Rich in vitamins Good for colds, asthma eosinophil, primary complex, wheezing	Some consumers unaware of cleaning process. cooking process (lots of wastage) Takes time to eat; need to use both hands	Bought both live or dead Fry, sweet dish. <i>purtu</i> , <i>korma</i> , soup.
Price proportionate to size	“Supposed to stimulate brain cells”	Heat-producing	
Best during new moon phase - heavy (more fleshy) Crab felt to be available	Tasty		

11.5 Perceptions relating to dried fish (Karuvadu)

<i>Perceptions</i>	<i>Benefits</i>	<i>Barriers to usage</i>	<i>Usage practice</i>
Across income groups, felt to be tasty	Useful in emergencies, rainy season, when fish is not available	Strong odour Too much salt - can cause B.P. - can cause diarrhoea - skin allergy	Low, middle and upper income consumers stock dried fish
Involvement and consumption high in low income groups	Tasty	Good quality not easily available	Fried at least twice a week
Good quality is defined as that which is free from sand, less salty, stiff, properly dried, white in colour,	Can be “tored		Used in place of chips or pickles Best varieties Seer, Seaperch (Cock-up), Anchovy, Ribbon-fish are felt to be tasty and smelly.

11.6 Perceptions relating to Prawn

- * Small and medium-sized Prawn perceived to be more easily available,
- * Across groups, Prawn are felt to be costly, unaffordable.
- * While small Prawn are seen as relatively cheap, they are considered difficult to clean.

- * Prawn are perceived to be very tasty and are liked by all, but are considered uneconomical,

“Prawn are uneconomical – not only costly, but reduce to half the size when cleaned”

“We need to add drumsticks, potatoes for mileage.”

“Making Prawn dishes is a thankless job... even children like it a lot nothing will be left over for us.” – (Housewives)

- * Prawn specialities: Fry, biryani, korma, vada, bajji cutlets
- * Low income consumers buy small variety when they are cheap.
- * Middle and upper income consumers buy Prawn at least once a month.

II.7 Awareness and perceptions of packaged/processed fish

Lower income consumers are completely unaware of packaged or processed fish foods. Since affordability and economy are critical to these consumers, they do not express a need for packaged or processed fish. However, they are heavy users of dried fish, finding it handy and economical. They also do not mind its smell.

Good quality dried fish is not felt to be easily available. The currently available dried fish, at least in the markets that these consumers frequent, is felt to be improperly dried and contains too much salt, which, it is felt, causes diarrhoea and other health problems. What these consumers desire is a properly dried fish, with less salt, free from sand and dust, and available loose rather than packaged. They are quite clear that they do not wish to pay any premium for packaging.

While a few middle and upper income consumers feel that good quality dried fish is available in certain markets both loose and packaged — most are not aware of this. There is a need among these consumers for clean, good quality dried fish, preferably without salt. They are quite willing to pay a premium of two to four rupees for such quality as well as for a functional kind of packaging.

The quantitative study indicated a fairly high degree of awareness of frozen fish. So consumers in the groups were further asked what they understood by the term 'frozen fish'. Except upper income consumers, there was no clear understanding of the term and it appeared to be generally used for all iced fish.

Middle and upper income consumers are aware of a number of packaged fish items viz. packaged or tinned Prawn, tinned fish, especially of Seem and Seaperch, Prawn chips, pickles, fish pickles, dried Prawn, fish in vinegar and Prawn appalams. However, there is very little trial of any of these products. The fears or doubts are related to shelf life, smell and taste of such products. Since there are few companies of repute manufacturing or marketing such products, the general run are perceived to be not reliable or of good quality.

Among those groups which showed an interest in packaged fish or fish products, a few packaging ideas were examined. Fish fillets in transparent polythene bags and cartons were shown to them. Upper income consumers displayed greater interest in transparent polypacks than in cartons. The former, it is felt, enables the consumer to examine the freshness and quality of the fish as well as of the quantity available. Further, polypacks are felt to be better value packaging compared to cartons. When asked about the ideal pack sizes, consumers felt that options of 250 g and 500 g packs would be useful. The majority prefer smaller packs, since these induced trial and experimentation. When asked whether they prefer fish in raw or processed form, the consumers stated that processing not only hiked the cost of the product but also restricted the nature of preparation.

The latter objection could be explained by the research experience available in the area of foods. The reason why ready to cook, or ready to bake, foods are yet to become popular in India is that whenever the role of the housewife in preparing food is unduly reduced, it is not only seen as robbing her of the satisfaction of preparing the meal herself and the kudos she gets for it, but is also seen as poor value. The latter could be explained by the fact that whenever housewives compare the cost of making food themselves and buying a readymade product, their time is never considered an important input and a cost is never placed on it. One basic dimension which is critical in evaluating processed or packaged food is the value for money that it is perceived to offer.

Consumers in all the groups observed that fish products available abroad are of two types: tinned fish marinated in sauce or vinegar and the dehydrated or preserved, processed type. A lot of consumers prefer the second type, as they feel it to be more versatile and relatively more affordable. The premium that consumers are willing to pay for such processed fish is 5-10 Rs/kg. depending on the variety of fish processed.

12. CURRENT PURCHASE AND USAGE PRACTICES

One of the objectives of the research was to examine the current purchase and usage practices in relation to fish as well as the rationale underlying such practices. Such an exercise was primarily meant to identify the areas of dissatisfaction, current needs and the scope for improvement in the distribution and marketing of fish.

12.1 Purchase habits

Purchase habits were found to vary with the different income groups. Lower and middle income housewives normally buy all vegetarian food items themselves. Among upper income groups, however, the task is shared between the men and women. Even in the latter case, the men are found to be involved only in certain circumstances *viz* when the markets are far away, when the market is expected to be too crowded, when a large quantity is to be bought or a bigger market is preferred.

Another aspect of male buying of fish is that, as fish is generally available only later than 10 am, men are generally available only on Sundays to purchase fish or other non-vegetarian items. This suits households where fish or other non-vegetarian food is prepared only on Sundays. But in the case of households where fish is cooked on other days too, it is the housewife who, after completing the routine chores, goes to the market to buy fish.

Other reasons why housewives do not rely on the menfolk to buy fish are that the men are not felt to have sufficient knowledge about the various types of fish or their freshness and that the men do not bargain at the outlets.

The outlets frequented by lower income groups are the fish markets in the vicinity. Consumers belonging to the middle and upper income groups, however, are felt to utilize local markets, the more popular bigger markets, the government fish stalls or even the home vendors. Home vendors are of two types: those covering lower income areas, and who are perceived to have a downmarket image because of the supposedly poor quality (left-overs) of fish they carry, and those operating in the upmarket localities who not only bring good quality fish but also variety according to the consumers' needs. Male vendors are felt to bring a wider variety of fish on bicycles, whereas women normally carry less variety.

The frequency of purchase of fish is found to be a function of the frequency of preparing fish dishes. Consequently, fish is, on an average, bought twice a week. Lower income groups state that the frequency of purchase is a function of their disposable income, the prevailing price of fish at the time of purchase and the relative price of vegetables.

An attempt was made to find out the consumers' outlay on fish and, more specifically, whether there was a certain commitment in terms of the quality of fish or outlay on fish across income groups. Group discussions revealed that among lower income groups, as little as Rs 5-6 is spent a week on fish, since a heap is available for Rs 2-3. The upper income consumers' outlay ranges from Rs 25 to Rs 30 a week, mainly because the expensive varieties are bought.

12.2 *Variety of fish consumed*

The variety of fish bought and consumed by consumers was found to be different for the different income groups covered during the research. Despite low income consumers being aware of a very wide variety, they consume only a few inexpensive varieties on a regular basis viz. Bream, Goatfish, Sardine, Silverbelly. These consumers occasionally bought Pomfret and Seer varieties and the smaller, cheaper varieties of Prawn.

Middle income consumers confined their regular purchase to Bream, Shark and Sardine. Pomfret, Seer varieties and Prawn (again, the smaller variety) are occasionally bought.

Upper income consumers were found to be far less prone to experiment than the middle and lower income consumers. Due to familiarity with the taste and their perceived premium, these consumers buy Seer, Pomfret and Bream. Seer and Silverbelly are bought for a change. When good quality and large-sized Prawn are available, they are also bought. These consumers are familiar with 'Golden Fish' and many have tried it.

12.3 *Factors influencing selection of fish*

Since consumers were found to make a limited selection of fish, despite awareness of a wide variety, an attempt was made to understand the factors which influence them in the selection.

Familiarity: Each group of consumers was found to restrict their consumption to familiar varieties. Familiarity is felt to be critical in assessing the taste, the number of bones, extent of flesh, oil content, the method of preparation as well as the freshness or quality of fish. The fears related to buying unfamiliar varieties are poor taste, too many bones and, possibly, poor value for money.

Freshness: While middle and upper income consumers pre-decided on the types they would buy, the specific variety that is ultimately bought is determined by the perceived freshness of the fish sold. Low income consumers never pre-decide on a type; the price is first considered and then the relatively fresher one is chosen from among the inexpensive varieties. To these consumers, affordability followed by freshness are more important than familiarity. Hence, more experimentation is found among these consumers.

Fewer bones: The ease of cleaning the fish, which is a function of the number of bones present, is another factor which influences consumers in their selection of fish. This concern is more pronounced among upper/middle income and upper income consumers. Low income consumers admit without any embarrassment that they have no choice but to select fish with more bones because of the economy benefit that it offers. They observe that the smaller varieties with more bones are tastier and more nutritive than the bigger ones. Moreover, to these consumers, time is not a limiting factor, provided it helps them save money. This also seems to apply to the rest of their consumption habits; for instance, they often buy vegetables which are cheap and nutritive but cumbersome to prepare. It is only the upper income consumers who prefer big fish due to the ease of cleaning as well as the status benefits they offer.

Consumers stated that, besides price, the premium factor, and ease of cleaning, the need for variety also governs the selection of fish. Another factor which helps consumers decide the type of fish is the nature of preparation. Certain fish are felt to be more suitable for currying, while others are selected for frying. A few middle income consumers justify the purchase of big fish by claiming that children prefer fish with few or no bones. Interestingly, certain fish are avoided primarily because of the repulsiveness caused by their appearance. The Tuna, which is perceived to have flesh akin to red meat, is one such example, while Eel, which looks like a snake, is another.

In addition to the above factors, there are specific occasions when certain types of fish are preferred due to their unique benefits. To fulfil status needs, Seer is felt to be ideal: Crab soup, Silverbelly. Whitefish are felt to be good for colds; Shark is considered a 'must' for lactating mothers as it is said to increase lactation.

12.4 *Perceptions relating to freshness of fish*

Consumers unequivocally hold that freshness is extremely important and is an overriding factor in influencing purchase. This is primarily because fish, unlike other non-vegetarian food, is seldom sold in a dressed form. Dressing, it is felt, would keep the fish fresher as it involved the removal of the organs, especially the kidney, which hasten rotting. Since chicken or mutton are sold in a dressed form, there is little fear of rotting. In the case of fish, as with consumers uncertain of the time of the catch, there is a greater fear of buying old fish. Old fish is considered poor value for money as it gives a foul smell, is difficult to slice, and spoils the preparation. It is therefore totally unacceptable.

The consumers' understanding of what is fresh fish was, surprisingly, similar across income groups. In other words, the knowledge pertaining to what is fresh is similar, irrespective of the income; however, the freshness standards adhered to are marginally different. Low income consumers admit to occasionally buying fish which is not ideally "fresh", albeit they never buy old or rotten fish.

All consumers agree that 'fresh fish' in its strictest sense is that which has not been kept on ice. However, the same consumers agree that fish is always kept on ice and 'fresh fish' (fish sold immediately after it is caught) is never available. A few consumers, however, believe that such 'fresh fish' is available on the beaches. When asked about how fresh they perceived the fish available to them was, a few felt it was available about 12 hours after it was caught, others felt 24 hours was a more realistic estimate.

12.5 *Cues used to assess freshness*

The major cues used to assess freshness were found to be similar across groups. They are:

- * **The colour beneath the gills.** Deep red indicates freshness, a dull colour connotes old fish, accordingly to the consumers.
- * **The firmness of the fish.** Softness means that the fish is old, a hard form indicates freshness, the consumers feel.
- * **The smell.** Consumers feel that rotten fish has a telling foul smell.
- * **The texture and the shine of the skin.**
- * **The colour of the slices.** In the case of big fish, slicing is done after selecting the fish.

In this context, consumers observed that vendors adopted a number of tricks to misguide or fool consumers. A red dye is often applied to the gills to make the fish appear fresh. While selling in heaps, rotten fish are mixed with fresh fish. Some vendors mix sand with fish, more so with Prawn, to persuade consumers about their freshness. In the catch, it was stated, old fish was, sometimes, frozen to make it hard, so that consumers would get misled by the hardness and assume the fish to be fresh.

12.6 *Perceptions relating to outlets*

In the course of discussions, many consumers observed that one of the deterrents in going to fish markets to buy fish is the poor hygiene standards in these outlets. However, when asked to list areas of improvement, improving the hygiene at fish outlets was never mentioned spontaneously,

except by upper income consumers. Low and middle income consumers are either not particularly concerned about the poor hygiene, or a more hygienic cleaner market is perceived to be possible only at the cost of adding to the overheads and increasing the cost of the fish. Their justification for this is that even in the most hygienic market, fish would certainly smell. Moreover, the fish, whenever it is bought, is thoroughly cleaned at home and, therefore, the cleanliness or appearance of the location does not matter much. A few consumers defensively stated that their fish markets are fairly clean and that the vendors there constantly sprinkle water to drive away the flies.

However, upper income consumers strongly felt that the hygiene at outlets is critical. Many housewives felt that the entire chore of buying fish is unpleasant and disgusting and that if they had the choice they would even give up eating fish rather than visit these markets. Left to themselves, they would be quite happy eating other food and avoiding fish, they claimed, but the taste and nutrition requirements of their children and husbands had to be fulfilled, so they put up with the smell and the filth when buying fish, they explained.

While these problems are felt to be almost absent in the Government fisheries stalls, there appear to be a number of barriers to visiting them. Firstly, the stalls, it is felt, sell only big and relatively expensive varieties. Secondly, bargaining is not possible in these stalls. Since bargaining is possible in every other outlet, consumers feel they are being deprived of good value for their money. Thirdly, these stalls are not felt to be as accessible as the fish markets. However, the advantages of these fish stalls, it is felt, is the freshness of stock, good quality, correct weighing and, above all, their fairly hygienic conditions.

An attempt is made below to present in tabular form a comparative evaluation of the various outlets, based on a summary of consumer perceptions.

EVALUATION OF OUTLETS AND HOME VENDORS

	<i>Fish markets</i>		<i>Govt. fisheries</i>	<i>Home</i>
	<i>Small</i>	<i>Big</i>	<i>stall</i>	<i>vendors</i>
Availability of good quality fish	+	++	++	
Wide variety	+	++	+	—
Reasonable price	++	++	+	
Availability of smaller and cheaper varieties	++	++	—	—
Easily accessible	++	+	—	+
Bargaining possible	++	+	—	+
Good value for money	+	++	+	—

++ = Very good; + = Good; +— = Ambivalent; — = Not Good;

12.7 *Cleaning of fish*

Cleaning of fish is perceived to involve the following steps:

- removing scales;
- removing intestines;
- removing the head and tail;
- removing bones;
- washing; and
- removing oil-content in certain fish.

Consumers were found to follow certain practices in order to contain the smell:

- Low and middle income consumers smear salt and turmeric powder after cleaning the fish and marinate it for half an hour.

Upper income consumers marinate the fish in vinegar or curd before frying it or making a curry.

In case of storing fish in the refrigerator, cleaned fish is soaked in *masala* and kept inside the freezer. Even in households owning a fridge, storing fish for over two days is uncommon.

Cleaning is done at home by housewives in the low and middle income households, as it is not perceived to be cumbersome. The time taken to clean fish is about half an hour to an hour, depending on the size of the fish,

In upper income households, small fish are cleaned in the market, bigger fish at home by the housewife or servant or the older women members of the family.

12.8 *Preparation of fish dishes*

Basic fish preparations were found to be similar across income groups. Taste is the overriding factor across groups in the preparation of fish dishes. Since fish is felt to intrinsically have a high nutritive value, consumers do not feel the need to enhance or retain its nutrition while cooking it.

In the low and middle income groups, the need for economy is found to be accentuated. Upper income consumers are, however, relatively more experimentative.

Fish curry and fry are the most common dishes across all groups:

Fish curry is made with tamarind puree and *masala*; tomatoes and Onions are optional]

Fish is fried after marinating it in *masala* for about half an hour.

While low income consumers make on\ rice and *rasam* (mulligatawny) when fish is cooked, middle and upper income consumers cook vegetable dishes as well. Curd is seldom taken with fish.

Low and middle income consumers cook Prawn with potatoes or other vegetables to fill out the dish: this is partly because Prawn is expensive and partly because it reduces in size when cleaned. Upper income consumers make *ko,'ma* or *biryani* with Prawn; frying is also common.

Income consumers cook fish in earthen pots, while the others use steel vessels.

Other sea food specialities are:

- * Soup with Crab.
- * *Korma* (using coconut) using Anchovy.
- * *Vada, bajji, biryani*, chips, cutlets with Prawn as well as fish.
- * Baked fish (upper income consumers only).
- * A sweet dish made with crab.
- * Shark *puttu* (flakes of steamed shark scrambled with onions and chillies).

12.9 Consumption practices

The consumption habits of some consumers are quite interesting. While fish is itself never stored (except occasionally in a refrigerator), fish preparations are felt to taste best the day after they are cooked. Further, since there are two or three days in a week when fish is never eaten, viz. Tuesdays, Fridays and Saturdays, due to religious sentiments, it was often cooked only on Sundays and Wednesdays as it could then be kept and eaten the next days, i.e., Mondays and Thursdays. Fish is eaten in plenty in July and August, as there are few auspicious days during these months. On the other hand, fish is completely avoided during October, as there are many auspicious days when women fast. Due to logistical reasons, fish is consumed either for dinner or, when leftover, for breakfast, on weekdays, and for lunch, on Sundays.



Fish curried, fishfried

APPENDIX I

Names of fish

<i>English (local)</i>	<i>Tamil</i>	<i>English (general)</i>	<i>Scientific name</i>
Bream	<i>Sankara</i>	Threadfin Bream	<i>Nemipterus</i> spp.
Seer	<i>Vanjaram/Seela</i>	Spanish Mackerel	<i>Scomberomorus</i> spp.
Pomfret	<i>Vavol</i>	Pomfret	<i>Pampus</i> spp.
Prawn	<i>Eral/Eraa</i>	Shrimp	<i>Penaeus</i> spp.
Crab	<i>Nandu</i>	Crab	<i>Portunus</i> spp.
Golden Fish/Ifilapia	<i>Thilaepia/Jilehi</i>	Tilapia	<i>Tilapia nilotica</i> : <i>T.mo:amhica</i>
Seaperch (Cock-up)	<i>Kodus'a</i>	Giant Seaperch	<i>Lates calcarifer</i>
Whitefish	<i>Sudumhu/Suthumhu</i>	Big-jawed Jumper! Whitefish/False Trevally	<i>Lactarius lactarius</i>
Anchovy	<i>Nethili</i>	Whitebait	<i>Stolephorus</i> Spp.
Mackerel	<i>Kanaan keluthi</i>	Indian Chub Mackerel	<i>Rastrelliger kanagurta</i>
Moustached Thyrssa	<i>Poruva</i>	Moustached Anchovy	<i>Thrvssa</i> spp.
Lizardfish	<i>Thumbili/Thanni Panna</i>	Greater Lizardfish	<i>Saurida tumbil</i>
Sardine	<i>Mathi</i>	Indian Oil Sardine	<i>Sardinella longiceps</i>
Goatfish	<i>Nagarai/Navarai</i>	Goatfish/Red Mullet	<i>Upeneus</i> spp.
Shark	<i>Sura</i>	Dog Shark! Sharp-nosed Shark	<i>Scoliodon laticaudus</i>
Catfish	<i>Kel/uthi/Ke:huthi</i>	Catfish	<i>Anus</i> spp.
Ribbonfish	<i>Valai/Vaalai</i>	Ribbonfish/Hairtail	<i>Tnichirus</i> spp.
Horse Mackerel/Carangids	<i>Parai/Paarai</i>	Trevally/Scad	<i>Caranx</i> spp.
Indian Salmon	<i>Kala/Kaala</i>	Threadfin	<i>Polynemus</i> spp.
Flatfish	<i>Naakumeen</i>	Sole	<i>Cynoglossus</i> spp.
Flatfish	<i>Ada!</i>	Flounder	<i>Pseudorhombus</i> spp.
Ray	<i>Thirukkai</i>	Sting Ray	<i>Himantura</i> spp.
Eel	<i>Vilangu</i>	Eel/Moray	<i>Gymnothorax</i> spp.
Jewfish	<i>Kathalai</i>	Croaker/Jewfish	<i>Johnius spp./Johnieops spp!</i> <i>Sciaena</i> spp.
Jewfish	<i>Panna</i>	Tiger-toothed Croaker	<i>Otolithes</i> spp.
Tuna	<i>Soorai</i>	Frigate Tuna/ Mackerel Tuna! Skipjack Tuna	<i>Aaxis sp;Euthvnnus</i> sp. and <i>Katsuwonus</i> sp.
Silverbelly	<i>Karal/Kara podi</i> (small ones)	Ponyfish/Silverbelly	<i>Leiognathus</i> spp.
Perch	<i>Kilichan/Keeli/Keechan</i>	Tiger Perch	<i>Therapon jarbua</i>
Barracuda	<i>Goli/Gola/Oozha</i>	Barracuda/Seapike	<i>Sphvraena</i> spp.
Flyingfish	<i>KolalParavi Kola</i>	Flyingfish	<i>Cypselurus sp./Exocoetus</i> sp
Mullet	<i>Madavai</i>	Grey Mullet	<i>Mugil</i> spp.
l-lilsa	<i>Ullam/Vengannai</i>	Indian Shad	<i>Hilsa</i> spp.
Mussel	<i>Aazhi/Matti</i>	Mussel	<i>Perna</i> spp.
Clam	<i>Kilinjal</i>	Clam	<i>Meretrix</i> spp.

FRESHWATER FISH — GANGETIC CARP INTRODUCED IN TAMIL NADU

Catla	<i>Catla</i>	Bengal Carp	<i>Catla catla</i>
Rohu	<i>Rohu</i>	Bengal Carp	<i>Labeo rohita</i>
Mirgal	<i>Mirgal</i>	Bengal Carp	<i>Cirrihna mirgala</i>

FRESHWATER FISH — EXOTIC CARP INTRODUCED IN TAMIL NADU

Common Carp	<i>Satha Kendai</i>	Scale Carp	<i>Cyprinus carpio</i>
Silver Carp	<i>Velli Kendai</i>	Silver Carp	<i>Hypophthalmi mytus molitris</i>
Grass carp	<i>Paasi Kendai</i>	Grass Carp	<i>Ptenopharvngodon idellus</i>