



## **Inventory Study of Viraval Fish Market, Navsari, Gujarat**

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### **ABSTRACT**

Fishing is an important livelihood activity for India, as well as a state like Gujarat which has a coastline of 1,596 km. Fishes are well known for their nutrients and are a good source of protein. A fish market is a marketplace for selling fish. The wholesaler buys fish in bulk and sells it to the retailer or directly in the market to consumers. The Retailer sells fish directly to the consumers. Vendors sell fish directly at consumers' doorstep. The present study will give the scenario of the Viraval fish market of Navsari. Obtained results would be helpful to the Fisheries Department to develop strategies and plans for training and extension work in marketing. The present work would give information about the situation of the market during the lockdown and post-lockdown. During the study, twenty-three traders from the Viraval fish market were interviewed. In the present study, a total of 31 fish species belonging to fourteen orders were recorded. Major available fish species in the Viraval fish market are Indian major carp, Bombay duck, catfishes, Boi, pomfret and shrimp. The present study highlights the wholesale and retail fish market of Viraval. This work would give information about women's involvement in fishing activities such as aquaculture, catching and marketing, and fishing. The study recommended developing the wholesale and retail market with basic needs such as a drainage system, lavatory and working space for maintaining the hygiene conditions of the fish market.

Keywords: Wholesaler, Retailer, Vendors, lockdown, market

### **INTRODUCTION**

Aquaculture refers to the cultivation of aquatic organisms in controlled aquatic environments for public and commercial purposes. The word aquaculture refers to all forms of culture of Aquatic animals and plants in fresh, brackish and marine environments.

Fish include approximately 34,000 species of vertebrate animals found in fresh and salt waters. Fishes are diverse aquatic animals that live and breathe in water. The fisheries sector has been recognized as a powerful income generator as it stimulates the growth of several subsidiary industries and is a source of cheap and nutritious food. (Chourey et al., 2013)

India is the largest fish-producing country and the second-largest aquaculture fish producer in the world. Most of the fish production and capture are sold in local markets in India. Many species of fish are caught by humans and consumed as food all around the world. Eating oily fish containing omega-3 fatty acids may lower the risk of cardiovascular disease. Fish is a vital source of food for people. According to the Food and Agriculture Organization (FAO, 1997) it is the most important single source of high-quality protein. A fish market is a marketplace for selling fish and fish products. Fish markets were known in antiquity Fish and fish products have the largest group in the agricultural exports of India (Kumar, 2004). The fish market comprises wholesalers, retailers and vendors. The wholesaler buys fish in large quantities from auctioneers and transports them to exporters. They normally know the demand for species outside markets and are aware of the average trend of daily fish catches at landing centres.

Wholesalers have some value additions in terms of sorting, grading, cleaning, icing and packing fish before transporting. The wholesaler undertakes the challenges of selling the fish and keeps a higher margin as compared to auctioneers. The wholesaler has trucks to transport products to his facility where they are cleaned and graded based on size, quality and defects. The retailers sell fish directly to the consumers. Retailers have the assessment of local demand. The retailer sort, cleans, ice, and pack fish for the consumers. Maximum value addition to fish happens with retailers. Retailers keep higher marketing margins. Retailers mainly buy fish from the wholesaler but in some cases, retailers buy fish directly from the auctioneers.

Vendors sell fish directly to the consumer's doorstep. They include a person who sells fish that is live, fresh or frozen. Vendors being mobile, most of the vendors are women. Fish vendor means any commercial fisherman selling their catch. They are forced to sell all the products on a given day, as they can't hold or store fish. The major hindrance in fish marketing includes perishing ability and large quantities, storage, transportation, quality and quantity of a commodity, low demand elasticity and high price spread (Ravindranath et al., 2008).

The per capita consumption of fish has been continuously increasing over the past few decades. The increased intake of fish protein in developing countries is further driving the industry.

Gujarat state is at the top position in Fisheries as the west coast of India covers 20% (1600 km) of the country's coastline, 33% of the continental shelf area (1,64,000 sq. km) and more than 2,00,000 sq. km of Exclusive Economic Zone ranks second among all maritime states of India in marine fish production. South Gujarat has a 300 km coastline constituting 19% of Gujarat's coastline. South Gujarat covers districts Bharuch, Narmada, Tapi, Navsari, Surat, and Valsad. Navsari is an administrative district in the state of Gujarat in India. In Navsari one fish market is operating; the wholesale fish market is located at Viraval, Mahavir society, Navsari. The wholesale market operates in the morning while the retail fish market operates in the evening at the same location. The main aim of the present work was to find out the status of the Viraval fish market of Navsari along with the status of fish wholesalers and retailers engaged in fish marketing.

Rao (1983), Gupta (1984), Shrivastava (1985), Sathiadas and Panikar (1988), Sathiadhas and Kangman (2000), Zynudheen et.al (2003), Kumar et al (2008), Ravindranath (2008), Munireddy (2008), Upadhyay (2008), Das et al. (2013), Aswathy et al. (2014) Mopidevi and Devi (2015) and Gomra (2020) studied on the different aspects of fish markets from different areas of India. Present work carried out in the Navsari district of Gujarat would give a scenario of the Viraval fish market of Navsari city. The outcome of the present work would be helpful to the Fisheries Department to develop strategies, and policies and helpful to know women's involvement in the fish market. This work would provide information about the infrastructure and hygienic conditions of the fish market and also be helpful to know the fish market condition during COVID-19 and after post-lockdown.

## MATERIALS AND METHODS

### STUDY AREA

The present study was conducted in the Viraval fish market, Navsari district. The market has both Wholesale and Retail markets. The city is located in southern Gujarat and is situated near the Purna River. (Fig.1). The Wholesale fish market was operated during the morning time and the Retail fish market was operated during the evening time at the same place at Mahavir Nagar Society, Viraval, Navsari.

### DATA COLLECTION

A Scheduled self-prepared questionnaire containing 28 questions was prepared for the study purpose. Questions were asked through interviews During the interview with fish traders, questions were read one by one and any technical aspects present in the questionnaire were explained easily and in simple language to them. The wholesale market was operated during the morning while the Retail market was operated during the evening time.

This study adopted convenient sampling following Kothari and Garg (2014). Fish species identification was based on external morphological features, including body shape, length, depth, nature of the fish spine, scales, number and position of fins, size of scale, and various measurements of body parts (Day,1889; Talwar and Jhingran, 1991).

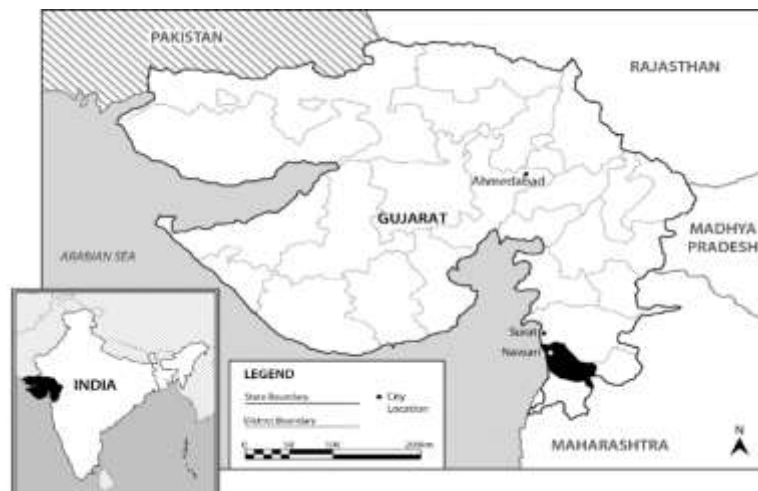


Fig. 1: Map depicting the study area

## RESULTS AND DISCUSSION

### FISH MARKET'S DETAILS

In the Viraval fish market, fish were sold through wholesale and retail markets. Vendors played an important role in fish marketing. The wholesale fish market had a total of 17 traders who were enrolled for fish trading from 6:30 a.m. to 9 a.m. The market had both male and female wholesalers. Fishes sold in the market were brought from Porbandar, Dwarka, Veraval, Somnath, Mumbai, Okha, Dholai and other parts. Trucks loaded with fish were brought early to the market where a cooling facility was available. Fishes were packed in thermocol boxes. Ice vending was located at the entry of the market, so they could have the required cooling facility. The fish and meat markets were in pathetic condition next to each other. It is a small market and

the passage for navigation is occupied by the vendors. The market was found to be congested and does not care much about cleanliness. There was a proper building for marketing, with the facility of electricity, and proper flooring. The hygienic condition was average. The lavatory and washing facility was not available. Most of the wholesalers used the chilling facility, ice boxes or crushed ice for chilling. Fishes were sorted according to species and size and sold in the market. Some wholesalers packed the unsold fish in ice-stored thermocol boxes for the next day's sale. Fish cleaning and the cutting facility were also available with a charge of Rs 20 per Kg. Prawns were available in large quantities. Most of the prawns that arrived here were from the Tapi River. The market was closed during the lockdown for around 3 months. After the lockdown market is running continuously. There was a lockdown during COVID-19, so transportation was stopped during the pandemic. Fish distribution was found at the local and district level. Wholesalers sold fish to local people and retailers. Approximately 20-ton fish were sold daily by wholesalers of the Viraval fish market. Fresh fish were available in bulk. The retail fish market was located at the same place as the wholesale market at Viraval, Navsari. The selling of fish on the road without any facilities like electricity, water, or flooring was found. The infrastructure of the retail fish market was found to be poor. Fishes were sold in the retail market from 4:00 p.m. to 7:30 p.m. The facility lavatory was not available. The hygienic condition was poor, and the area was very much congested. Retailers sold their fish to local people and vendors. Fishes were preserved in ice boxes. Fish distribution was carried out at both local and district levels. The market was enrolled with around 10 retailers. The market condition was very unhygienic. The retailers used plastic baskets, steel bowls, polythene sheets, and thermocol sheets to display fish. Being a highly perishable commodity the, cold chain forms an integral part of fish marketing (Markad et.al 2019). None of the Viraval fish market sellers have appropriate cold storage and freezing facilities.

The income level of fish retailers was relatively lower than wholesalers. Three vendors were involved in fish vending. Fish marketing through vendors was not common. They sold fish at the market and the consumer's doorstep. Most of the vendors were women. They do not have the facility to hold or store the fish. They also carried out value addition including sorting, grading, cleaning, and icing fish. Vendors act as mobile because they sell fish directly at the consumer's doorstep.

Women were found involved in many fisheries activities such as aquaculture, fishing, and capture. Mostly female fishermen were observed selling fish and shrimps in all the markets of Viraval town. The present study illustrates how women are engaged in selling the fish in Viraval fish market. Women were playing a significant role in the fish market. About 50 % of females were observed selling fish in the Viraval fish market.

#### FISH SPECIES DETAIL

Thirty-one species of fish like Catla, Rohu, Bombay duck, Mudskipper, Freshwater prawns, Pungus, Mullet, Pomfret, Catfish, Rani fish and many more species were available in this market (Table 1). The recorded fish belonged to the fifteen order and Cypriniformes was the dominant order followed by Perciformes (Fig.1)

#### FISH PRICE DETAIL

The Price of species varied considerably depending on the availability, freshness, and condition of the specimen being sold (Table 2). Alam et al., (2010) also reported the influence of market structure, species quality, size and weight on the price of fish. Generally, larger and more palatable fish get more price compared to smaller and less preferred ones. The same was noticed in the study from the Viraval fish market. *Eleutheronema tetradactylum*, *Pampus argenteus*, and *Scomberomorus guttatus* fetched the highest price compared to other species of fish (Table 2)

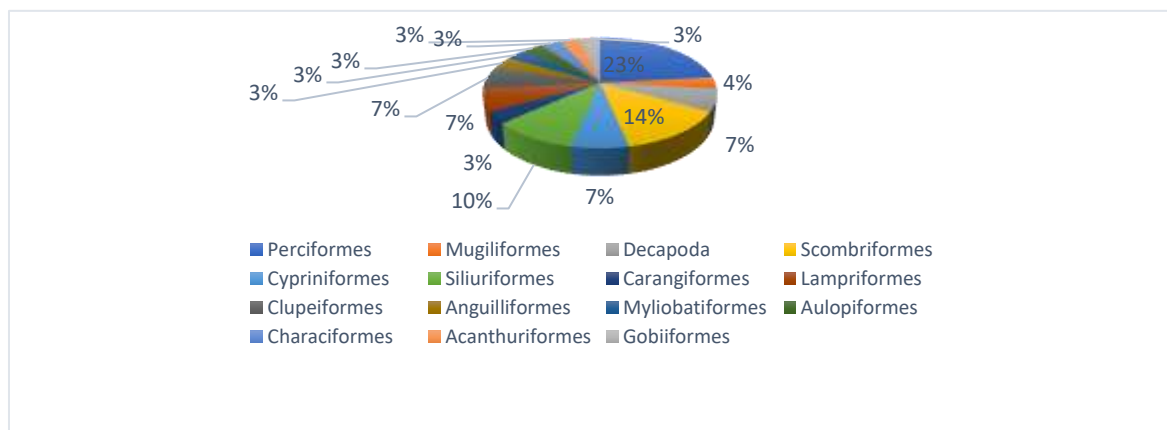


Fig.2 Order contribution of available fish in the fish market

Table .1 Fish fauna of Viraval fish market

S.N.	VERNACULAR NAME	SCIENTIFIC NAME	ORDER	FAMILY
1	Rawas/Dara	<i>Eleutheronema tetradactylum</i>	Perciformes	Polynemidae
2	Boi	<i>Mugil cephalus</i>	Mugiliformes	Mugilidae
3	Freshwater Prawn	<i>Macrobrachium rosenbergii</i>	Decapoda	Palaemonidae
4	Marine shrimp	<i>Penaeus monodon</i>	Decapoda	Penaeidae
5	Rohu	<i>Labeo rohita</i>	Cypriniformes	Cyprinidae

6	Catla	<i>Catla catla</i>	Cypriniformes	Cyprinidae
7	Pankaj/Basa	<i>Pangasius bocourti</i>	Siluriformes	Pangasiidae
8	Rani fish	<i>Perca flavescens</i>	Perciformes	Percidae
9	Gedli	<i>Trachurus trachurus</i>	Perciformes	Carangidae
10	Patra/Pankha	<i>Lampris</i>	Lampriformes	Lampridae
11	Bangda	<i>Rastrelliger kanagurta</i>	Scombriformes	Scombridae
12	Mandeli/Bhat	<i>Stolephorus indicus</i>	Clupeiformes	Engraulidae
13	Kati	<i>Stolephorus indicus</i>	Clupeiformes	Engraulidae
14	Kagda/Eel fish	<i>Anguilla bengalensis</i>	Anguilliformes	Anguillidae
15	Marghi machhi	<i>Lethrinus nebulosus</i>	Perciformes	Lethrinidae
16	Magur/Catfish	<i>Clarias batrachus</i>	Siluriformes	Clariidae
17	Valkhal/Stingray	<i>Dasyatis Pastinaca</i>	Myliobatiformes	Dasyatidae
18	Modar/Hilsa	<i>Tenulosa Ilisha</i>	Clupeiformes	Clupeidae
19	Maruti	<i>Lutjanidae</i>	Perciformes	Lutjanidae
20	Crab	<i>Brachyura</i>	Decapoda	Dromiacea
21	Bombay duck	<i>Harpodon nehereus</i>	Aulopiformes	Synodontidae
22	Rup Chandan	<i>Colossoma macroponum</i>	Characiformes	Characidae
23	Godra	<i>Epinephelus chlorostigma</i>	Perciformes	Serranidae
24	Lal machhi	<i>Nemipteridae</i>	Perciformes	Nemipteridae
25	Raja	<i>Lutjanus fulviflamma</i>	Perciformes	Lutjanidae
26	Dhangri	<i>Boesemania microlepis</i>	Perciformes	Sciaenidae
27	Levta/Mudskipper	<i>Boleophthalmus</i>	Gobiiformes	Oxudercidae
28	Singhara	<i>Sperata seenghala</i>	Siluriformes	Bagridae
29	Dai fish	<i>Desmodema polystictum</i>	Lampriformes	Trachipteridae
30	Paplet/Pomfret	<i>Pampus argenteus</i>	Scombriformes	Stromateidae
31	Surmai	<i>Scomberomorus guttatus</i>	Scombriformes	Scombridae

Table .2 Price list of Fish in the Viraval fish market

SR. NO.	VERNACULAR NAME	COST PRICE (Rs/kg)		SELLING PRICE (Rs/kg)	
		MIN	MAX	MIN	MAX
1	Rawas/Dara	550	600	605	666
2	Boi	150	180	170	190
3	Freshwater Prawn	300	400	385	424
4	Marine shrimp	300	410	385	424
5	Rohu	200	210	205	226
6	Catla	210	230	225	248
7	Pankaj/Basa fish/Katro	100	120	120	140
8	Rani fish	205	270	265	292
9	Gedli	70	85	85	100
10	Patra/Pankha	85	90	90	100
11	Bangda	200	230	225	248
12	Mandeli/Bhat	210	220	220	240
13	Kati	200	210	220	240
14	Kagda/Eel fish	85	120	110	150
15	Marghi machhi	70	95	85	100
16	Magur/Catfish	110	140	120	150
17	Valkhal/Ray	85	120	100	130
18	Modar/Hilsa	450	500	475	523
19	Maruti	250	300	300	350
20	Crab	440	520	485	534
21	Bumla/Bombay duck	85	100	90	120
22	Rup chandan	60	80	70	110
23	Godra	220	240	250	260
24	Lal machhi	440	470	480	500
25	Raja	405	470	450	480
26	Dhangri	300	340	320	340
27	Levta/Mudskipper	150	200	180	210

28	Singhara	110	140	150	170
29	Dai fish	350	360	370	380
30	Paplet/Pompfret	670	705	685	754
31	Surmai	550	605	565	622

## CONCLUSIONS

Several restraints for fish marketing were reported by the retailers. The limitations were poor storage facilities, a sufficient supply of ice, technical knowledge, and a lack of proper marketing channels and infrastructure. Based on the findings of the study the following recommendations have been made for the improvement of the existing marketing of fish:

- Introduction of modern wholesaling and retailing facilities while maintaining the quality of products;
- Introduction of guidelines for quality control
- Establishment of ice facilities medium in the fish market
- An efficient marketing system and proper channel for selling and distribution
- Improvements in hygienic and sanitary facilities of the fish market
- Technical training for handling and storage of fish as well as maintaining hygienic conditions from statutory bodies.

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