

ETHNOICHTHOLOGY AND FISH MARKETING IN TOLUCA, MEXICO

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Fish could be an important source of protein in the Mexican diet, because it is utilized by a wide range of socioeconomic classes. However, ethnographic information concerning the marketing of fish, is not available. Studies of the fisheries and the fishing industry in México have been made by Ford, Bacon and Davies (1950), and J. A. Cobos (1963), but these studies provide virtually NO ethnographic information of fish markets and ethnochthyology in México.

The purpose of this study was to make a preliminary survey of the marketing of fish products in a large market center in Mexico, and to detail the ethnoiethyology of the marketing process. This included looking at the relative amounts of fish species sold, the origin and methods of fish preparation, pricing, market organization, and general aspects of the ethnography of fish sellers.

This study was conducted in the Mercado Juarez, the major marketing center of Toluca. Toluca is centrally located in the Valley of Toluca, approximately 49 kilometers west of Mexico City, and the *mercado Juarez* is just off highway 15 in Toluca. Market day is on Friday, and virtually everything from clothing to spare car parts can be purchased, and all types of fresh produce and meat products, as well as various canned goods, are available. The market area consists of two large warehouse-like buildings containing permanent wood and concrete vending stalls, and a large outside area with vendors selling their wares under and transported on ice from La Viga, the central fish market and fish distribution center in Mexico City. The fish in La Viga arrive icepacked or refrigerated in trucks from Veracruz or Campeche mostly,

and other parts of the country. These trucks arrive at La Viga in the early morning hours, and their contents are bought up by the fish merchants in La Viga, and then sold in bulk to the fish merchants from Toluca and other areas.

In July, 1980, there were five inside fresh fish vendors, or *pecaderías*, and twelve outside vendors. All of these were family run businesses, with the people working at any one *pecadería* being kinsmen of the inside vendors. The *pecadería* González, with six working mestizo kinsmen, was the largest. They generally sold *bagre* (*Bagre bandera*), *sierra* (*Scomberomorus maculatus*), *mero* (*Epinephalus guaza*), *robalo* (*Centropomus sp.*), *lisa* (*Mugil cephalus*), *huachinango* (*Lutjanus campechanus*), *huachinango chico* (*Lutjanus synagris*), *cazón* (*Rhizo-prionodon terraenovae*), *gurrubata* (*Cynoscion nebulosus*), and *mojarra de mar* (*Gerres cinereus*). Folk names of these species varied from Veracruz to Toluca, however. For example, *cazon* is either *cazon* or *tiburón* in La Viga, whereas in Veracruz it is *cazón del Atlántico*, while *gurrubata* in Veracruz is a completely different species (*Micropogon undulatus*), or *spo ed croaker*.

In the preparation of fresh marine fish for sale, a variety of tools are used. Fish are prepared on a chopping block called a *banco*, which is a section of trunk cut from a pine tree (Figure 1). Fish scales are removed using an *escamador*, while fillets are prepared using a *filetero*, and a *paleta* or *machete*, *puestos* which are cloth tarps supported by wooden or aluminium poles. There are also several smaller buildings on the west and north side of the market, which are used mostly as eating places. The market area is completed by a large unloading dock for trucks carrying fresh meat and produce.

There are a variety of fish products available in the market, including fresh fish and shellfish as well as dried, baked, and canned fish. Canned fish are only available from several vendors inside the market, and are a minor component of the total fish produce sold.

Excluding canned fish, there are three major categories of fish products available in the Mercado Juárez: 1) Fresh marine and freshwater fish, 2) dried marine freshwater, and 3) wood-smoked freshwater fish. Table 1 lists the species of fish available in the market, as well as their place of origin.



FIG. 1. A series of *bancos* being used for preparing fish. These men are working under a *puesto*.



FIG. 2. An outside fresh marine fish vendor selling his fish from an ice-filled *vitrina*, or counter.



FIG. 3. An Indian woman, in the background, selling carp from several cloth-covered *huacales*. Notice the scale in the foreground, used for feing the carp.

method of preparation, and general availability. In most cases, fish were identified to the species level, although some only to the generic level. Fish were identified using systematic works by Campillo Saenz (1976), Castro Aguirre (1978) and Alvarez del Villar (1970). Each of the above three categories of major fish products will be discussed separately. Included in the discussion of each category will be details of social organization, the methods and tools of fish preparation, and general ranking and importance of the category in the total amount of fish produce marketed.

A) *Fresh marine and freshwater fish*

All purchased fresh marine fish in the Mercado Juárez is cut into round steaks called *ruedas*. A special *machete* is a *cuchilla*, which has a notch in the cutting head. This notch is used to pull out the gills of a fish prior to cutting off the head. Fish heads are sold for use in soup, and the gills must be removed because they decompose rapidly when exposed to the open air. All fish are displayed on ice to preserve their freshness (Figure 2). The popularity of marine fish varieties probably changes seasonally, but the most commonly sold fish during this study were huachinango, robalo, mojarra de mar, and lisa. Huachinango and mojarra de mar are generally sold as fillets or whole for pan frying, while robalo, which is a large, meaty fish, were never observed being sold whole, but only as fillet or rued. Split robalo and huachinango heads are very popular for making fish soup, although the heads of lisa, sierra and mero are also used. The gonads of lisa (*hueva*) are sold as a delicacy.

Assorted marine species, as well as fresh charales (*Chirostoma*) and mojarras de agua dulce (*Cichlosoma*) are sold out-side from huacales, or wooden crates, cooked as fish tamales. These are sold by Indian women, either Otomis or Mazahuas, are cooked in *hojas de maiz* (ears of corn) and are seasoned with chile peppers and tomato. The preferred species for making fish tamales were small *Scomberomorus* and Caranx, which fit well in the corn leaf wrap. Fresh freshwater fish were exceedingly rare in the market, with only a few charales (*Chirostoma*) and carpa (*Cyprinus carpio carpio*) seen.

B) *Dried Fish*

Dried varieties of fish sold include *bagre*, *bacalao* (*Brotula barbata*), *mojarra* (*Cichlosoma*) and, most importantly *charales*. Dried fish were sold in greatest quantities inside the market, where eleven permanent vendors were counted during this study. The *bagre*, *bacalao*, and *mojarra*, being larger fish, were always heavily salted as well as dried to prevent decomposition, and did not sell well. The three largest inside vendors had lots where unsold dried and salted fish which has gone bad were dumped. The dried *charales*, however, sold quite well, being small and thus not requiring salting to prevent decomposition.

Charales are prepared for eating in several ways. *Charales grandes* (5 to 8 cm.) are eaten as an entrée, usually being covered with egg and fried. *Charales chiquitos* (2 to 4 cm.) are made into *fish tortas* in which the fish is washed and let stand in water to soften and rehydrate, after which it is fried with egg and then put on a *torta* with *mole* made with dried peppers and green tomato sauce. *Charales* can also be prepared in *fish tamales*, and this was a favorite dish with the *vendedores* themselves, who would eat them in the market as part of their afternoon meal.

Dried *mojarra* and *bagre* were usually sold stacked in piles, while dried *charales* and *camarones* (shrimp) were displayed in *canastas*, or wicker baskets, with *charales* being sorted as *grandes* and *chiquitos*. Dried fish are never sold alone, and products sold with dried fish included dried shrimp, tamarind, cacao, peanuts, onions, dried chile peppers, all kinds of seeds and dried beans, and a variety of spices.

A young man in his early twenties ran one dried fish stand with his wife. They paid 2,000 pesos per month for rent for their stand. They sold dried *charales*, purchasing *chiquitos* for 70-80 pesos per kilogram, while *grandes* were purchased at 30 pesos per kilogram and sold at 35-40 pesos per kilogram. They bought *charales* in lots of 50 kilograms, and usually sold half of what they bought every fifteen days. They kept their surplus fish, and would not purchase new lots of fish until they had less than 50 kilograms left for sale. Dried fish did not sell as well as fresh or baked fish, and can be considered a less important protein source.

TABLE 1
FISH SPECIES SOLD IN THE MERCADO JUAREZ IN THE SPRING OF 1980

Origin	Family	Genus-Species	Common Name English	Common Name in the Mercado Jrez. Spanish	Price Range pesos/Kg. or pesos/fish	Occurrence Rare, common, or abundant	Method of preparation
Marine Veracruz; Campeche	Carangidae	<i>Caranx hippos</i>	Crevalle	Curel	20-30/Kg.	Common	Fresh-Whole
Marine Veracruz; Campeche	Lutjanidae	<i>Lutjanus synagris</i>	Lane snapper	Huachinango chico	50-100/Kg.	Abundant	Fresh-Whole, fillet
Marine Veracruz; Campeche	Lutjanidae	<i>Lutjanus campechanus</i>	Red snapper	Huachinango chico	50-100/Kg.	Abundant	Fresh-Whole, fillet
Marine Veracruz; Campeche	Mugilidae	<i>Mugil cephalus</i>	White mullet	Lisa	40-80/Kg.	Common	Fresh-Whole, fillet
Marine Veracruz; Campeche	Kyphosidae	<i>Kyphosus incisor</i>	Chub	Mojarra	80/Kg.	Rare	Fresh-Whole
Marine Veracruz; Campeche	Centropomidae	<i>Centropomus</i>	Snook	Robalo	120-180/Kg.	Rare	Fresh-Whole, fillet
Marine Veracruz; Campeche	Gerreidae	<i>Gerres cinereus</i>	Mojarra	Mojarra de mar	40-80/Kg.	Abundant	Fresh-Whole
Marine Veracruz; Campeche	Carcharhinidae	<i>Rhizo prionodon terraenovae</i>	Atlantic sharpnose shark	Cazón		Rare	Fresh-fillet
Marine Veracruz; Campeche	Carangidae	<i>Selene vomer</i>	Lookdown	Papelillo	15/fish	Rare	Fresh-Whole
Marine Veracruz; Campeche	Sphyraenidae	<i>Sphyraena guachancho</i>	Guaguanche	Picuda	30-60/Kg.	Rare	Fresh-Whole
Marine Veracruz	Balistidae	<i>Colamus nodosus</i>	Knobbed potgy	Pez pluma	80/Kg.	Rare	Fresh-Whole
Marine Veracruz; Alvarado Campeche; Ciudad del Carmen	Ariidae	<i>Bagre marinus</i>	Gafftop	Bagre; bandera	25-60/Kg.	Common	Fresh-Whole Dried, salted
Freshwater state of lake chapala, Chi- huahua; Torreón; Alvarado	Cichlidae	<i>Cichlasoma</i>	Cichlid	Mojarra Mojarra de agua dulce	30-50/Kg. (baked) 15-30/Kg. (dried)	Abundant	Fresh-Whole (rare) Baked Dried, salted
Freshwater Lake Patzcuaro Lake Chapala	Atherinidae	<i>Chirostoma</i>	Silverside	Pescado blanco Charal Popocha	30-80/Kg.	Abundant	Fresh-Whole (rare) Baked
Marine Veracruz	Brotulidae	<i>Brotula barbata</i>	Bearded brotula	Bacalao		Rare	Dried, salted
Freshwater stotg of Michoacan, state of Chihuahua	Cyprinidae	<i>Cyprinus carpio carpio</i>	Common carp	Carpa	25/Kg. 10-25/fish	Abundant	Fresh-Whole (rare) Baked
Freshwater state of Michoacan; state of Chihuahua	Cyprinidae	<i>Cyprinus carpio specularis</i>	Speckled carp	Carpa	25/Kg. 10-25/fish	Abundant	Fresh-Whole (rare) Baked
Marine Veracruz; Campeche	Scombridae	<i>Scomberomorus specularis</i>	Spanish mackerel	Sierra Peto	60-80/Kg.	Abundant	Fresh-Whole, fillet
Marine Veracruz; Campeche	Sciaenidae	<i>Cynoscion nebulosus</i>	Spotted seatrout	Gurrubato Robalito	40-60/Kg.	Common	Fresh-Whole
Marine Veracruz; Campeche	Serranidae	<i>Epinephelus nigritus</i>	Warsaw grouper Jewfish	Mero	40-80/Kg.	Common	Fresh-fillet

C) *Smoked fish*

The most abundant fish sold in the market is *carpa* (*Cyprinus carpio*) prepared *ahumado*, *mojarras* (*Ciclosoma*) are also prepared in this way, but are a minor component in the total number of smoked-baked fish sold.

Carpa are generally sold in the outside market area by vendors using *huacales* as stands. On one Friday, the day of the full market, forty two vendors were counted selling carp outside from *huacales*, and two (both men) selling from *puestos*. The thirty nine women selling carp were Otomis and Mazahuas. When asked if carp vending was their major source of livelihood, ten out of ten women vendors replied that they only sold carp to supplement their husband's income, who were either working in the fields as manual laborers or in their small towns as hired workers.

Carp are brought in frozen by truck from as far away as the state of Chihuahua, a distance of approximately 1,400 kilometers, with most of the carp coming from the state of Michoacan. The carp are of two varieties, representing two subspecies, *Cyprinus carpio carpio*, the common carp, and *Cyprinus carpio specularis*, the speckled carp. The two are easily distinguished by the size of their scales, with *C. carpio specularis* having much larger scales than *C. carpio carpio*. Unlike the marine species and other freshwater species, carp are not caught from natural stocks, but are reared in ponds. Carp are distributed frozen to the houses of the *carperos*, called *carperías*. Here the fish are sold directly to carp vendors to be baked in their own home ovens, or are more often baked in the ovens of the *carpería*, a service included in the price of the carp. Occasionally, a middle-man will buy the carp from the *carpero* and distribute them frozen to small surrounding *pueblitos* by bicycle or pickup trucks.

In preparing carp, it is first thawed and washed. Salt and spices are then added. Different individuals having their own recipes. It is steam-baked over a wooden fire (*ahumado*). Carp are brought to the market wrapped in polyethylene plastic inside of large wicker baskets, with the basket mouth being covered with a white cloth to keep the fish clean. In selling carp, customers are encouraged to sample the fish, which is stacked in neat piles on top of cloth covered *huacales* (Figure

3). Carp can be sold whole or in pieces, but are almost always sold *ahumado*. On only one occasion were fresh carp seen being sold, and these consisted of only three small-sized fish. The carp ranged in size from approximately twenty centimeters and a little less than one fourth a kilogram up to approximately sixty centimeters and two kilograms, *C. carpio specularis* were larger than *C. carpio carpio*. Carp are bought in lots of forty kilograms, once a week, and are usually all sold by the end of the full market day on Friday. If the forty-two carp sellers counted are actively selling every week of the year, they would sell approximately 6 720 kilograms a month, or 80,640 kilograms of carp a year.

An example of a typical carp seller was an old Indian woman, approximately fifty years old, who sold her carp from a *huacal* outside. She bought the carp from a man who purchased it from a *carpero* in Villa Victoria, Michoacan, which is several kilometers from her *pueblo*. Early in the morning, she would cook her carp in her home oven, and then take it to the Mercado Juarez to sell it. On special holidays, she would also take a bus to Mexico City and sell carp there. She indicated that she bought carp at twenty two pesos per kilogram, and sold it fort thirty to fifty pesos per kilogram. She was disatisfied with her occupation, however, and was thinking of leaving it to wash clothes because "it gives me better profits".

CONCLUSIONS:

As was indicated in the introduction, this is only a preliminary survey, and was not meant to be a detailed study covering all aspects of fish marketing in Toluca. However, some general conclusions can be drawn from this study which would point the way toward further avenues of investigation. From the numerous fish vendors in the market, it can be concluded that fish is well sold between the general populace in this region. The origin of these fish (Table 1) is generally outside the state of Mexico with the states of Michoacan and Veracruz being main areas for production of freshwater and marine fish, respectively. It would be useful to detail the entire marketing chain for these fish, and to determine cost-profit margins for the various types of fish products, and how de-

mand and supply factors affect the economic status of those involved in the sale of these products. This would help fish sellers and producers in making marketing decisions which could increase their profits, and possibly provide a cheaper and more abundant supply of fish products to consumers.

Seasonal variations in supply and demand for the various fish species has not been detailed, but information gathered from informants indicates that fresh freshwater species and dried fish are available all year round. The supply of fresh marine fish vary seasonally, and the factors which control this can only be obtained by doing a year-long study.

The economic importance of fish vending has been shown to vary with the type of fish products sold. Carp sellers are involved in a supplementary economic activity. Dried fish are only one of several products, including dried spices, vegetables, and other produce and are sold by permanent vendors who are open all week. The fresh marine fish sellers running the inside *pescaderías* sell fish not only on market days but all week long, while the outside fresh fish sellers can be found in other small markets in the valley through the week; thus, fresh marine fish sellers are engaged in a constant and singular economic endeavor.

SUMMARY

A preliminary survey of fish marketing in Toluca, México, is made, and details of the marketing process and ethnoichthyology were collected. There are three basic types of fish sold: 1. Fresh, 2. Dried, and 3. Smoked. Smoked fish, generally carp, the most important fish product sold, with fresh fish being of secondary importance and dried fish the least important. Fish are sold by family groups. The origin of these fish are generally outside the state of México, with the states of Michoacán and Veracruz being main areas for production of freshwater and marine fish, respectively.

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