



## Marine fish marketing systems in coastal Bangladesh: Potential for development

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Bangladesh's coastal waters contain diverse fisheries resources, with 475 recorded species of finfish including the cartilaginous fishes - sharks, skates and rays (Mazid, 2005). However, only 90 fish species are commercially important. These fall under the common groups of hilsa (herring), pomfret, marine catfish, tuna, coral fish, marine eel, jawfish, ribbonfish, bombay duck and shark (Fisheries Sector Review, 2003). The majority of the commercially targeted stocks are reported to be over-exploited and there were significant declines in catches after around 1997 (Kleih et al., 2002).

The marine fisheries sector has been recognized as an important part of the economy. Marine fisheries production has marginally increased over the last 10 years but its relative share in fisheries production has declined from 31% in 1991 to 22% in 2004. The total fish production in Bangladesh was 2.1 million tons in 2004 of which 43% was from freshwater aquaculture, 35% from inland fisheries and 22% from marine sources (DOF, 2005).

In terms of volume, value and employment, the marine fish market in



Typical fishing boats in the Patuakhali coast, Bangladesh.

Bangladesh is large. The fish marketing system is traditional, complex, and less competitive but plays a vital role in connecting the fishermen and consumers, thus contributing significantly in the 'value adding' process which otherwise would have been unused or underused and consequently in the earnings of the fisherfolk (Chowdhury, 2004). In Bangladesh, the market for fish is associated with strong demand, driven by continued increases in rural and urban populations, real term growth in income amongst key consuming sectors, and a traditional and

continuing preference for fish in the diet. Fish play an important role for the population of Bangladesh as indicated by the proverb 'mache bhate Bangali' (fish and rice make a Bengali). However, fish consumption appears to have fallen marginally because fish prices have been increasing faster than prices



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*Auctioning fish by an aratdar.*

of other commodities (Fisheries Sector Review, 2003).

Fish prices have increased due to the middlemen in the marketing sector, as they have established a new marketing chain based on the exploitation of the fishing communities by setting up an artificial pricing chain through intermediaries at different levels (Kleih et al., 2001). The most serious marketing difficulties seem to occur in remote fishing communities, which lack regular supplies of ice, have poor transport facilities and where the fishermen are in a weak position in relation to intermediaries (Kleih et al., 2003). In such locations, many fish are processed into lower valued cured products and the process of curing often involves considerable losses due to spoilage. Post-harvest losses also occur in all fish distribution and marketing systems. Due to the growing gap between fish supply and demand it is important to reduce losses as much as possible for the benefit of poor marketing people and consumers.

This study sought to broadly understand marine fish distribution and marketing systems in the Patuakhali area of southern Bangladesh. Primary data were collected for six months from July to December 2005 through a field survey employing questionnaire interviews, rapid market assessment, cross-check interviews with key informants, and participatory rural appraisal tools such as focus group discussion and SWOT analysis (Strengths, Weak-

ness, Opportunities and Threats). Fifty questionnaire interviews were carried out, which included 20 assemblers, 10 wholesalers and 20 retailers. This paper provides information on commercially important marine fish distribution and marketing systems, marketing costs, prices of fish, marketing margins and profits, incomes of traders, and constraints of fish marketing. It also provides some recommendations for further development of marine fish marketing systems in coastal Bangladesh.

### Catch composition of marine fish

A large number of people, many of whom live below the poverty line, find employment in the coastal fish marketing chain as fishermen, assemblers, processors, traders, intermediaries, transporters and day labourers, including women and children. Coastal fishing in Bangladesh is highly seasonal, with the main hilsa (*Temalosa ilisha* – the national fish of Bangladesh) season taking place between June and September, and other fishing during the calm weather from October to May. Hilsa is the main species caught in the Bay of Bengal. A breakdown of the catch of commercially important marine fish is presented in Figure 1.

Fishermen work on their own boat or other people's (locally known as mahajans) boats. Fishermen who work on mahajans' boats tend to have



*Icing of fish at the landing center.*

an arrangement with the boat owner regarding the share of the catch. Usually the owner of the boat retains about 50-60% of the catch and the fisherman keeps the remainder. The boat owner, who may not necessarily join the fishing at sea, sells the entire catch himself and keeps the sales proceedings. The owners have got full control over the fishermen as they have extended credit for the purchase of their nets and other fishing equipment. Fishermen often feel exploited by the mahajans – believing that the prices they receive for their catch do not adequately reflect the prices paid for fish in the wholesale or retail markets where they are subsequently sold.

According to the survey, 88% of the marine catch in the study area is marketed internally for domestic consumption while the remaining (12%) is exported to the international market. Bangladesh exports frozen fish primarily for overseas ethnic markets. There is a demand for fish by Bangladeshis living outside the country (e.g. UK, USA, Middle East, etc). They demand good quality hilsa, pomfret and other fish. Export of hilsa also takes place to India (Kleih et al., 2003).

### Fish marketing systems

In the study area, fish marketing is almost entirely managed, financed and controlled by a group of powerful intermediaries. The market chain from fishermen to consumers encom-

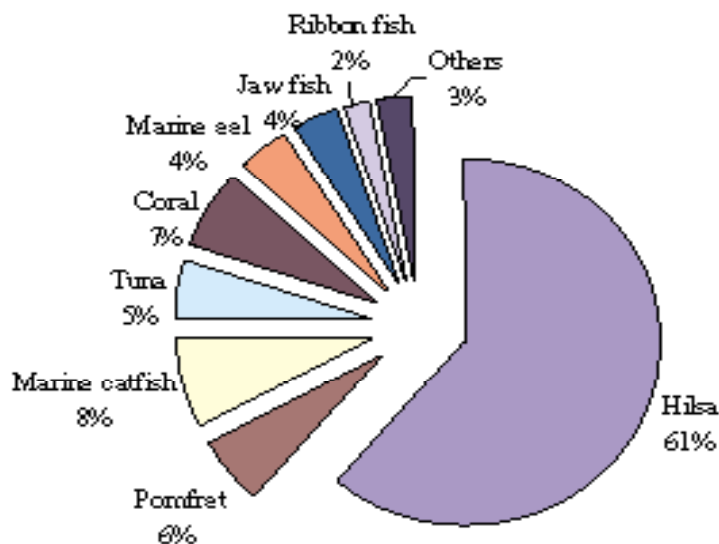
passes mainly primary, secondary and retail markets, involving sales agents, suppliers, wholesalers and retailers (Figure 2). Fishermen are the primary producers in the fish marketing chain. With a few exceptions, fishermen never directly communicate with wholesalers, retailers and consumers. Fishermen tend to sell their catch at the landing centers (primary markets) to suppliers (locally known as baperies or paikers) with the help of commission-based sales agents (aratdars). Aratdars play a leading role in the fish marketing systems at primary markets. As soon as the fishermen land the fish in the primary

market, the aratdar takes care of landing, handling, sorting and auctioning by species and size-groups. Normally, the auction sale is made by heaps. In general, aratdars follow the incremental price system. It is the most competitive form of auctioning and ensures better prices for fishermen. Auctioneers call out the bid by the bidders loudly in the presence of the buyers. Aratdars get commission at different rates of the sale proceeds, normally 2 to 5% of the auction price, for their services and costs involved.

In the present fish marketing system, the auctioneers and baperies (local or non-local traders) play a crucial role in determining prices for marine fish at the landing centre. Communication between the aratdars and baperies is generally good and takes place by mobile phones. Baperies are a form of intermediary traders who supply fish from primary market to wholesale market. In general, baperies are tied to a limited number of aratdars. A few labourers work with the aratdars and baperies. They perform post-harvest tasks that include cleaning, sorting, grading, icing and transportation. Baperies commonly use boats, trawlers, micro-buses, buses and trains to transport fish from coastal areas to the wholesalers at urban fish markets who then sell to retailers.

Two main categories of fish retailers have been encountered: market-based retailers and itinerant retailers (fish

**Figure 1: Catch composition of marine fish in the Patuakhali area (Source: survey data, 2005).**





A registered worker at primary market.

vendors, hawkers, etc). Retail sales are made at stalls in fish markets and to door-to-door to household customers. Fish are traded whole, ungutted, and fresh without processing apart from sorting and icing. More than 75% of the total marine catch is actually consumed in distant places, so it requires processing, icing and transportation. A large number of day labourers including women and children are involved in the process. The travel duration

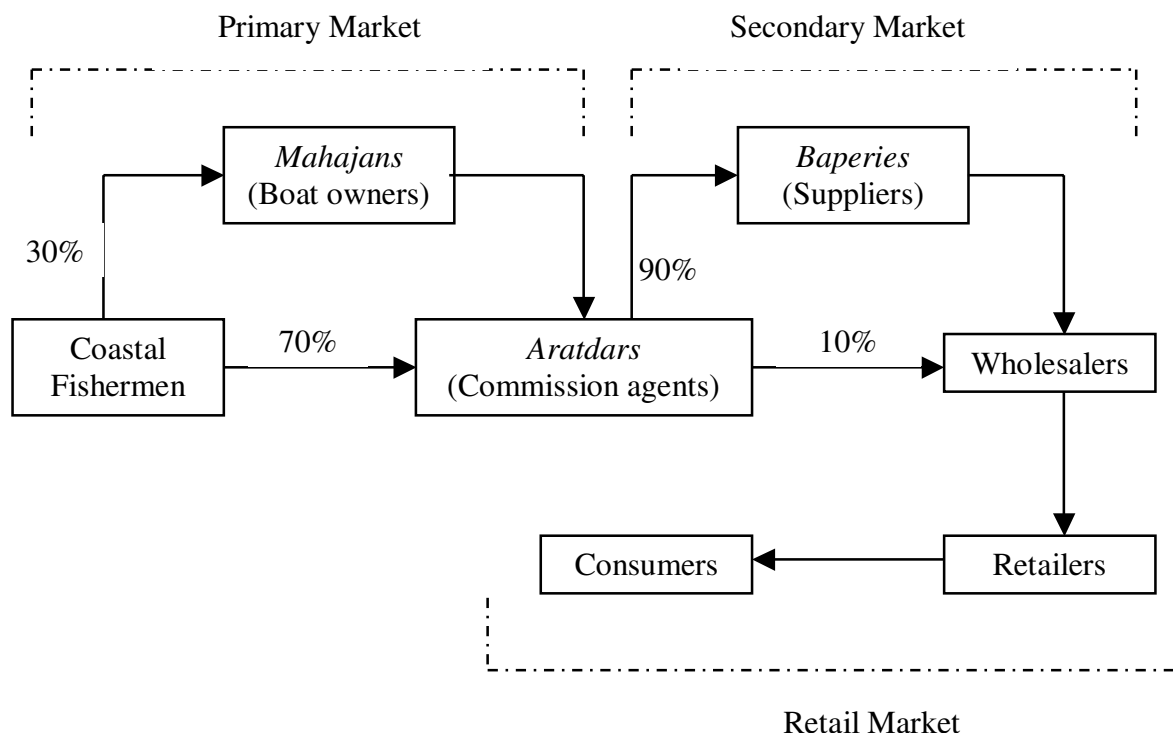
between primary markets and retail for urban markets is usually less than 12 hours. People in Bangladesh generally prefer fresh fish without icing. The next preference is for iced fish (Chowdhury, 2004). Fish is iced with consideration of transportation, space and time. If the transportation time is less than six hours from primary market to retail point the fish is not iced, or if iced, it is not done properly. Other forms of fish products are frozen, salted and dried.

According to the survey, the percentages of fish product forms were 35% fresh, 45% iced, 12% frozen, and 8% dried. As there is a large gap between supply and demand, fish marketing, or selling of fish, is very easy in primary, secondary and retail markets. The demand for fish is high in markets but supply is limited, and a strong network has developed with intermediaries and traders intervening between fishermen at one end and the consumers at the other end.

### Marketing costs

Fish marketing costs include expenses such as rental of the market place, ice, electricity, transport, and labour etc. The costs of fish marketing depend on the species, volume of fish, market distance, market infrastructure, mode of transportation, form of marketed fish (i.e. fresh or iced), and labour required. The average marketing costs for marine fish in different markets are shown in Table 1. The highest average marketing cost per kilogram of fish was found in the secondary market (Tk 5.10 or US\$ 0.07 per kg) followed by the primary (Tk 3.90 or US\$ 0.05 per kg) and consumer markets (Tk 3.10 or US\$ 0.04 per kg).

Figure 2: Marine fish marketing channels from fishermen to consumers (based on survey).



**Table 1: Average marketing costs (Tk/kg) incurred for marine fish in different markets.**

Marketing cost component	Primary market	Secondary market	Retail market
Icing	0.20	0.40	0.30
Transportation, loading and unloading	0.30	0.50	0.20
Rent of market place	0.30	0.40	0.60
Electricity	0.40	0.30	0.60
Weight loss/damage	0.20	0.50	0.40
Wage and salaries of workers	0.60	0.90	0.60
Commission for auctioneers	1.60	1.80	---
Others (market toll, water for washing fish, etc.)	0.30	0.30	0.40
Total	3.90 (US\$0.07)	5.10 (US\$ 0.05)	3.10 (US\$ 0.04)
Source: Survey data (2005)			

**Table 2: The average sale prices of commercially important marine fish in different markets.**

Fish	Primary market		Secondary market		Retail market	
	Tk/kg	US\$/kg	Tk/kg	US\$/kg	Tk/kg	US\$/kg
1. Hilsa	70	1.02	95	1.39	110	1.61
2. Pomfret	120	1.76	150	2.20	175	2.57
3. Marine catfish	40	0.58	55	0.80	65	0.95
4. Tuna	75	1.10	105	1.54	120	1.76
5. Coral fish	70	1.02	95	1.39	105	1.54
6. Marine eel	35	0.51	50	0.73	60	0.88
7. Jawfish	50	0.73	60	0.88	70	1.02
8. Ribbonfish	40	0.58	55	0.80	65	0.95
9. Bombay duck	25	0.36	40	0.58	50	0.73
Source: Survey data (2005)						

**Table 3: Percentage shares of total value to marketing people for commercially important marine fish.**

Fish	Fishermen share	Baperis (Suppliers) Share	Wholesalers Share	Retailers Share	Total
1. Hilsa	55%	9%	22%	14%	100%
2. Pomfret	57%	10%	19%	14%	100%
3. Marine catfish	46%	16%	14%	15%	100%
4. Tuna	54%	9%	25%	15%	100%
5. Coral fish	57%	10%	23%	10%	100%
6. Marine eel	42%	16%	25%	17%	100%
7. Jawfish	57%	14%	15%	14%	100%
8. Ribbonfish	49%	13%	23%	15%	100%
9. Bombay duck	40%	10%	30%	20%	100%
Source: Survey data (2005)					

The price of fish depends on species, quality, size and weight, season, market structure, supply and demand, and consumption behaviour of consumers (i.e. taste). Fish prices are known to follow a seasonal pattern. When supplies are scarce fish prices increase. Demand behaviour may also contribute to inter-seasonal price fluctuations. There are many factors affecting the price of fish through demand and supply. On the supply side, fish prices are affected by the seasonality of production, and weather conditions which cause the seasonality of the market supply, i.e. the quantity of the product available on the market (Briones et al., 2004).

In the study area, prices are generally lower between August and December, rising during the following four to five months. Table 2 shows the average prices of commercially important marine fish from landing site to retail level. Over the last ten years, fish prices have increased dramatically, at a rate of 2.3% annually (Fisheries Sector Review, 2003).

Prices also vary from market to market. Prices in town markets tend to be higher than in coastal markets due to a larger concentration of consumers and superior family incomes. Moreover, market prices differ according to species and size. For the same species,

price depends closely on the size of the fish, with larger fish fetching significantly higher prices per kilogram. The present study found that higher value fish such as hilsa, pomfret, tuna and coral fish can only be afforded by wealthier consumers. On the other hand, lower income groups depend on cheaper fish such as bombay duck, marine eel, jawfish, and marine catfish etc.

### Marketing margins and profits

There exists a wide variation in the price received by fishermen for various marine fishes in different marketing



*Fish landing site in Kolapara, Patuakhali.*



*Child labour in fish market.*

channels over distance and time. The factors influencing such variation include marketing costs, marketing margins, numbers of intermediaries in the marketing channel, distances between the landing points and consumers' locations and prices. The margins received by intermediaries involved in the process of marine fish trade significantly discriminate against the fishermen on price in the Patuakhali area. Table 3 shows the percentage of value accruing to fishermen, suppliers, wholesalers and retailers. In almost all cases, fishermen received the majority share of the market value (40-57%). In the cases of hilsa, pomfret, tuna, coral fish and jawfish, fishermen received over 50% of total value. However, fishermen received less than 50% of total value for marine catfish, marine eel, ribbonfish and bombay duck. Amongst the intermediaries, the highest margins were received by wholesalers. These margins ranged from a low of 14% for marine catfish to a high of 30% for bombay duck.

Marketing margins and profits vary for different groups of fish. Table 4 provides an overview of hilsa (national fish which accounts 61% of total market share) traded between Patuakhali and Dhaka. The highest average

marketing margin per kilogram of fish was found in secondary markets (Tk 25 or US\$ 0.36 per kg) followed by retail (Tk 15 or US\$ 0.22 per kg) and primary markets (Tk 10 or US\$ 0.14 per kg). Similarly, the highest average marketing profit was found in secondary markets (Tk 19.90 or US\$ 0.29 per kg) followed by retail (Tk 11.90 or US\$ 0.17 per kg) and primary markets (Tk 6.10 or US\$ 0.08 per kg).

It is calculated that fishermen receive 55% of the final retail price. The total marketing margin is 45%, which is sub-divided into: 1) primary market: 9%, 2) secondary market: 22%, and 3) retail market: 14% (Table 4). It should be mentioned that in this case the marketing margin is relatively high due to the long distance between Patuakhali and Dhaka, which involves several transport stages and trader categories. Compared to the above figure, Kleih et al. (2003) identified a fisherman share of 60-65% and a middleman share of 25-40% for hilsa sold in Chittagong and Cox's Bazaar markets.

### **Income of traders and associated groups**

Fish trading is a profitable business and almost all traders reported that they had made profits and increased income. According to the survey, the average daily income of a fish trader (retailer) was calculated at Tk 190 (US\$ 2.79) which is higher than fishermen and day labourers, but lower than wholesalers, aratdars and baperies (Table 5). Survey results showed that a wholesaler makes an average net profit of Tk 310 (US\$ 4.55) per day. The average net profit of wholesalers was higher than any other marketing people due to access to capital, higher education levels, greater experience of fish trading, and control of fish marketing systems (i.e. powerful intermediaries). Fishermen stated that their average daily income was Tk 150 or US\$ 2.20, and varies with fishing rate, weather conditions and the market price of fish. Increasing population pressures may aggravate the problem of meager incomes of fishermen.

### **Marketing constraints**

In general, facilities at fish markets are minimal, with poor hygiene and sanitation. There are currently no stand-

**Table 4: Calculation of marketing margin and profit for hilsa in different markets.**

Markets	Items	Tk/kg	US\$/kg	Percentage
<b>Primary market</b>	Purchase price (PP)	60	0.88	55%
	Marketing costs (MC)	3.90	0.05	
	Sales price (SP)	70	1.02	
	Marketing margin (MM=SP-PP)	10	0.14	
	Marketing profit (MP=MM-MC)	6.10	0.08	
<b>Secondary market</b>	Purchase price (PP)	70	1.02	64%
	Marketing costs (MC)	5.10	0.07	
	Sales price (SP)	95	1.39	
	Marketing margin (MM=SP-PP)	25	0.36	
	Marketing profit (MP=MM-MC)	19.90	0.29	
<b>Retail market</b>	Purchase price (PP)	95	1.39	86%
	Marketing costs (MC)	3.10	0.04	
	Sales price (SP)	110	1.61	
	Marketing margin (MM=SP-PP)	15	0.22	
	Marketing profit (MP=MM-MC)	11.90	0.17	
<b>Consumer purchase price</b>		110	1.61	100%

*Source: Survey data (2005).*

**Table 5: The average daily income of fish marketing actors.**

Market actors	Daily Income	
	Tk/day	US\$/day
1. Fishermen	150	2.20
2. Aratdars (commission agents)	220	3.23
3. Baperies (suppliers)	255	3.75
4. Wholesalers	310	4.55
5. Retailers	190	2.79
6. Women traders	110	1.61
7. Day labourers	80	1.17
8. Children	50	0.73

*Source: Survey data (2005).*

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**Table 6: SWOT analysis for the development of marine fish marketing systems.**

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Diversity of marine fisheries resources</li> <li>• Almost all Bangladeshi people eat fish</li> <li>• Large number of people involved in fish marketing</li> <li>• Traditional and less competitive marketing systems</li> <li>• Strong network of marketing people</li> <li>• Environmentally friendly activities</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Poor market infrastructure</li> <li>• Unhygienic conditions</li> <li>• Inadequate ice facilities</li> <li>• Lack of concern from the government and NGOs</li> <li>• Weak fishermen’s cooperative societies and traders’ associations</li> <li>• Poor socio-economic conditions of traders &amp; associated groups</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• High demand for marine fish</li> <li>• Employment opportunities</li> <li>• Export potential</li> <li>• Increase in fish price will increase incomes</li> <li>• Improvement of socio-economic conditions of marketing people</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Inadequate supply of fish</li> <li>• Controlled by powerful intermediaries</li> <li>• Comparatively long marketing chain</li> <li>• Higher marketing costs</li> <li>• Lower marketing profits</li> <li>• Almost total lack of credit facilities</li> </ul>

ard practices for handling, washing, sorting, grading, cleaning and icing of fish. Most of the landing centers are set up by fish traders' associations or the fishermen's cooperative societies, thus most of the fish landing sites have a limited support infrastructure, and are perceived by some to be ill-managed and unhygienic. There are no facilities such as sheds in some landing centers for auctioning and preserving the fish. At the primary market level, the main constraints for fishermen are a lack of bargaining power and market information. The marketing infrastructure, including cold storage, ice and transport facilities is generally inadequate, unhygienic and in disrepair. Political disturbances (i.e. strikes, road blocks, etc.) also affect fish transportation as well as marketing. During survey visits in the study area, it was found that the damage of fish occurs mainly in the process of transportation from the landing centre to the retail points. Wholesale markets have better facilities, but in general conditions in primary and retail markets are far from satisfactory with regards to stalls, parking, spacing, sanitation, drainage and management. Quality control at landing, handling, distribution and marketing places is only periodically carried out. This is

largely because of a shortage of Quality Inspectors and the absence of emphasis on quality control for domestic markets.

### Development of marketing systems

SWOT analysis was carried out for the development of marine fish marketing systems in coastal Bangladesh (Table 6). A number of issues are important for the development and sustainability of marine fish marketing, including:

- Infrastructure: improvements of fish landing, transport, handling, and preservation facilities are essential to supply quality products.
- Supply of ice: insufficient supply of ice in markets is one of the most serious problems for fish preservation. Ice is fundamental for good quality fish storage and preservation. Having ice readily available on the premises would facilitate the enhancement of appropriate fish handling. It is therefore necessary to establish a sufficient number of ice factories for marketing of quality fish.
- Hygiene and quality: there seems to be very limited knowledge amongst fishermen, traders and intermediar-
- Credit facilities: fishermen, traders and associated groups do not have easy access to bank and NGO credits due to too much official paperwork and collateral arrangements. Therefore, assisting traders to obtain cheaper adequate bank credit for market operating costs should be considered.
- Government policy: a positive policy at government level should be considered for sustainable marine fish marketing systems.



*A bapari with a queen fish.*



*Fish markets provide employment for young and old.*





Day labourers are involved in unloading of fish from fishing boats.

## Conclusions

Marine fish marketing plays an important role in the economy of Bangladesh, contributing to increased food production, diversification of the economy, increased employment opportunities, and maintained rural communities. However, concerns arise about the long-term sustainability of marine fish marketing due to poor road and transport facilities, poor supplies of ice, lack of money and credit facilities, poor institutional support and inadequate extension services. It is therefore necessary to provide institutional and organizational support, government support, extension services, and more research and knowledge of fish marketing. In addition, the establishment of modern wholesale markets in large urban areas, and establishment of well-functioning assembly markets at important fish landing sites may help sustainable fish marketing systems in coastal Bangladesh.

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