

Maryland Sea Grant Extensions

Finfish Aquaculture

Factsheet #5

Understanding Fish Pricing: From Production to the Table

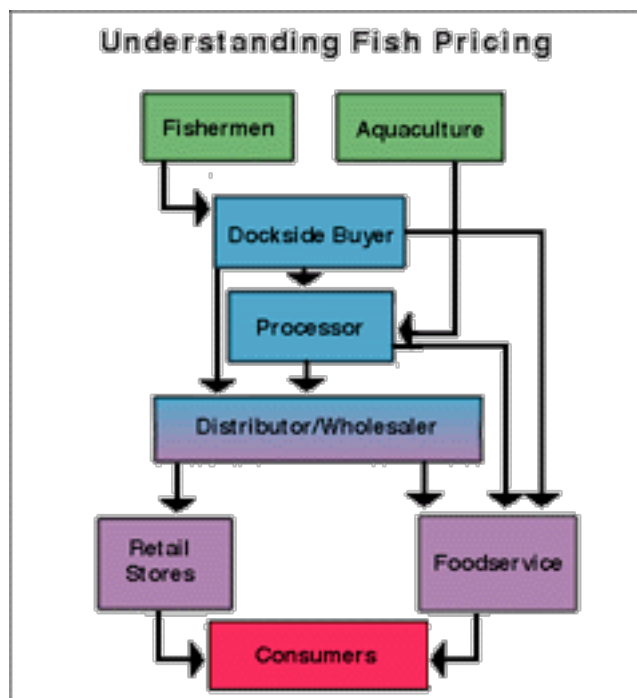
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Introduction

Your perspective on prices depends on where you enter the seafood market. If you are a seafood producer -- an aquaculturist or commercial fisherman -- you may question why the price you receive for your product is so low. On the other hand, if you are a seafood consumer you probably question why seafood prices are so high. This workbook will help explain some of the mystery behind seafood pricing. The intent is to provide some insight to producers and consumers on how prices are determined and to assist aquaculturists in projecting prices for new seafood products.

The Seafood Market



While the path that seafood takes from market to table varies among species and from region to region, a generalized diagram of seafood marketing channels has been developed (Figure 1). Each of the activities depicted here can either be performed by separate firms or one firm. Conversely, more than one firm may be involved in any of the activities: while one company may do preliminary processing, another may do further processing. Even the same species in a region can enter the market in a variety of forms.

In the Chesapeake Bay region, for instance, blue crab will reach consumers live, steamed, picked, or as a crab cake. The marketing channel for the live crab may simply be a sale from harvester to consumer; in contrast, a cooked crab cake might require that a processor purchase and pick the crab, then sell

it to another processor for making crab cakes, and finally, selling it to a distributor for sale to a retail market.

The major objective of each participant in the seafood marketing channel is to make a profit. Thus, every time ownership of the seafood product changes, its price goes up. The price increase from one channel to the next is the price margin or markup. This price margin is determined by the firm's expenses in handling the product plus its profit. For example, a fish processor who produces fish fillets must make enough on the subsequent sale of his or her product to pay for the whole fish, workers and managers, shipping costs, plant and equipment overhead; in addition, the firm must earn a reasonable return on investment.

A consulting report recently prepared for the National Marine Fisheries Service summarizes the current knowledge about the extent of price margins at various levels in the seafood marketing channels (Kearney/Centaur 1988). Information from this study has been used to develop a framework for understanding how seafood prices are set. The following discussion examines how prices are set between major marketing channels by working backwards from retail to secondary wholesale markets to primary wholesale markets to processors to producers.

Retail to Wholesale

Suppose that at a retail market the price for striped bass fillets is \$10 per pound, and that consumers will purchase one million pounds. Based on supply and demand expectations, at a higher price total consumption would be less; at a lower price, consumption would be more. If at production of one million pounds it would cost more than \$10 a pound to bring additional striped bass to market, then we can say there is a market equilibrium at \$10 a pound and one million pounds of fillets. We also assume a similar type of equilibrium exists in food service establishments, but there the price to the consumer is \$21 per pound of fillets.

(1)

$$W_s = R/1 + M_{\text{retail}}$$

where

$$W_s = \text{Secondary wholesale price}$$

$$R = \text{Retail price to consumer}$$

$$M_{\text{retail}} = \text{Mark-up at the retail or food service level}$$

(2)

$$W_p = W_s / 1 + M_{\text{secondary}}$$

where

The difference in price between the retail market and food service establishment can be explained by the fact that the price margin is significantly higher in the food service industry. The Kearney/Centaur study showed that retail stores mark up seafood about 32% over their purchase price, whereas food service establishments typically work on a 178% mark-up. Because we know what the average mark-up is for these establishments, we can calculate the price these establishments paid to the secondary wholesaler or distributor for the product. To do this, simply divide the retail price by one plus the mark-up:

$$(1)$$

$$W_s = R / 1 + M_{\text{retail}}$$

where

$$W_s = \text{Secondary wholesale price}$$

$$R = \text{Retail price to consumer}$$

$$M_{\text{retail}} = \text{Mark-up at the retail or food service level}$$

In our example the secondary wholesale price is:

$$W_s = \$10 / (1 + .32) = \$7.58 \text{ or } W_s = \$20 / (1 + 1.78) = \$7.58$$

In this example, both the retail and food service establishments pay the same price for the product to the secondary wholesaler or distributor.

Secondary Wholesale to Primary Wholesaler

Following the example down the marketing chain, the secondary wholesaler purchased the striped bass fillets from a processor or primary wholesaler. The Kearney/Centaur study found the mark-up of the secondary wholesaler is approximately 23%. The formula for determining the price paid to the processor or primary wholesaler by the secondary wholesaler or distributor is:

$$(2)$$

$$W_p = W_s / 1 + M_{\text{secondary}}$$

where

$$W_p = \text{Price paid to the processor or primary wholesaler}$$

$$W_s = \text{Secondary whole sale price}$$

$$M_{\text{secondary}} = \text{Mark-up of the secondary wholesaler(\%)}$$

For the striped bass example the price paid to the processor is \$6.16:

$$W_p = \$7.58 / (1 + .23) = \$6.16$$

Processor to Producer

Calculating the price that the processor pays to the fish producer is more difficult to estimate because the product form is changed. The producer usually provides whole fish to the processor so the prices need to be adjusted according to the yield the processor gets from the fish. Yields can vary greatly depending on the species, its size and the ultimate product form. Table 1 shows some yields of some species and product forms.

Processing margins will also vary among species and product forms, but the Kearney/Centaur study showed an average mark-up by processors for finfish of 97%. The mark-up for shellfish

(not including shrimp) was 179%. Calculation of price to the seafood producer is a two-step process. First calculate the price to the producer based on the processor's product form:

$$(3)$$

$$P_f = W_p / 1 + M_{\text{processor}}$$

where

P_f = Producer's price based on the processor's market form

W_p = Price paid to the processor or primary wholesaler

$M_{\text{processor}}$ = Processor's mark-up

In our example, the processor pays the producer \$3.13 for the fillets from his product:

$$P_f = \$6.16 / (1 + .97) = \$3.13$$

The second step is the calculation of the producer price in terms of whole fish, the product form the producer is supplying. To find the whole fish price, simply multiply P_f by the appropriate yield from Table 1:

Based on a yield of 35% from whole fish to fillets, the producer would receive approximately \$1.10 per pound for his whole fish:

$$(4)$$

$$P_w = P_f \times Y$$

where

P_w = Whole fish price paid to the producer

P_f = Producer's price based on the processor's market form

Y = Yield

$$P_w = \$3.13 \times .35 = \$1.11$$

What Price for My Product?

By working either forwards or backwards through these formulas, it is possible to make reasonable approximations of the price that a producer can expect for a seafood product. If you are working from the top down, then the key is to find out what the product you plan to produce is selling for in the retail or food service markets.

If wholesale prices are available, it is not necessary to look at the top end of the market. Depending on the market level that the wholesale price represents, it is possible to work back to a producer price from equation 2 or 3. There are a variety of public and private sources of wholesale fish prices including the market news office of the National Marine Fisheries Service in New York City.

Table 1. Product yields for different fish by type of procession. Source: National Marine Fisheries Service, Conversion Factors for Fishery Products, unpublished memo dated 7/15/81.

Species and Product Form	Yield from Live Weight to Product
Catfish	
• Fillets (raw)	32%
• Gutted	90%
• Heads-off gutted	65%
	59%

- Steaks

Flounders

	36%
• Fillets (raw)	87%
• Gutted	72%
• Heads-off gutted	60%
• Steaks	

Swordfish

	30%
• Fillets (raw)	83%
• Gutted	72%
• Heads-off gutted	62%
• Steaks	

Salmon (all species)

	35%
• Fillets (raw)	88%
• Gutted	69%
• Heads-off gutted	59%
• Steaks	

Striped Bass

• Fillets (raw)	35%
• Gutted	88%
• Heads-off gutted	69%
• Steaks	N/A

Another approach for examining potential prices is to figure your production costs and what kind of profit you need to be making in the fish production business to determine the price you need to receive for your product. Then starting from Equation 4, determine the wholesale and retail prices. Are these prices in line with other similar seafood products?

Limitations of the Analysis

Using the formulas, conversions and mark-ups above should serve as a general guide to fish prices. Remember, the mark-ups are based on industry averages, and there may be a great deal of variation within the industry based on the product, its processing and region of the country. Secondly, these assumptions are based on traditional seafood markets and marketing channels, whereas the development of a new segment of the seafood industry may develop its own market

channels with different mark-ups, such as the market for pond-reared catfish. Of course, shortages or surpluses of different products at a given time can also affect prices.

Shipping costs have also been shown to play a major role in seafood prices. As a rule, production closer to the market will have lower shipping costs, and thus lower mark-ups than production further away. Another factor to consider is that some of these marketing channels can be skipped over. Growers could perhaps do their own processing and marketing, selling directly to restaurants. However, remember that these activities have significant costs so that at least some of the higher prices received will be negated by these expenses.

References

Kearney/Centaur.1988. *Development of Value Added, Margin and Expenditures for Marine Fishery Products*. Prepared for National Marine Fisheries Service P.O. #40AANF701801.

Swartz, D. 1984. Marketing striped bass. In *The Aquaculture of Striped Bass*, Ed. J. McCraren. Maryland Sea Grant Program, UM-SG-MAP-84-01, pp. 233-254.

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