

**Walleye Markets in the  
North Central Region:  
Results of a 1996/97 Survey**

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**Technical Bulletin Series # 113**

In cooperation with USDA's Cooperative State Research,  
Education and Extension Service

USDA Grant # 95-38500-1410  
Illinois-Indiana Sea Grant Program  
U. S. Dept. of Commerce Grant # NA 76RG0596  
Purdue University  
August 1998





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## Executive Summary

Walleye is a popular sport and eating fish in the North Central Region (NCR). Virtually all U. S. walleye fisheries are off-limits to commercial fishermen in favor of sport fishermen. The commercial demand for walleye is supplied primarily by the Canadian market which has experienced some declines in its walleye fisheries. Because of walleye's popularity, high market value, and supply limitations, interest in the commercial culture of walleye has intensified in recent years. Considerable funds have been invested in developing commercial culture practices. This study examines marketing challenges and opportunities for commercial walleye aquaculture.

### Methods

In this study, a mail survey was conducted of retail and wholesale firms in the food industry, i.e., restaurants, supermarkets, seafood wholesalers, seafood retailers, foodservice distributors, grocery wholesalers, and fish brokers. Different survey instruments were developed for different firm types. Survey questions requested general information on firm characteristics and fish/seafood purchase/sales behavior along with specific information on purchase/sales of walleye. A mailing list was purchased from a private company. Survey mailings occurred between August 1996 and March 1997.

### Firm Characteristics Positively Influencing Walleye Sales

#### *Restaurants*

(tableservice establishments not part of a chain and not primarily serving pizza)

- More formal ambiance/more expensive menu
- Higher annual sales volume
- Greater presence of seafood on menu
- Location factors:
  - proximity to Great Lakes, closer proximity means more likely to serve walleye
  - state: predominantly Minnesota, followed by other states in northern tier of NCR

#### *Supermarkets*

(grocer stores with \$2 million or more in sales)

- Status as "chain" store (group of 11 or more)
- Larger physical size
- Higher annual sales volume
- Larger seafood department
- Seafood department offers full-service rather than self-service only

#### *Wholesalers*

(seafood wholesalers and retailers, foodservice distributors, and grocery wholesalers)

- Firm type: seafood retailers most likely to sell walleye, while grocery wholesalers were least likely
- Location: highest percentages of walleye sellers in Minnesota and Michigan

- Firm size: larger firms more likely to sell walleye

### Market Penetration

(percentage of firms, by type, that sold walleye in 1996)

- 41% of Restaurants
- 71% of Supermarkets
- 52% of Seafood wholesalers
- 68% of Seafood retailers
- 41% of Foodservice distributors
- 5% of Grocery wholesalers

### Details on Purchases and Sales of Walleye Products by Firm Type for July 1996

#### *Seasonality*

- Discernible cyclical patterns in wholesale prices paid, customer demand, availability of walleye supplies
- Cycles are more dramatic for wholesale firms than for restaurants
- Most firms sell walleye year round
- Restaurants: 2/3 sell walleye daily, while 1/4 sell walleye 1-4 times weekly

#### *Walleye Purchases by Restaurants*

- Product forms preferred:
  - frozen fillets, 67% of firms
  - fresh fillets, 27% of firms
- Product forms purchased in 1996
  - frozen fillets, 78% of firms
  - fresh fillets, 16% of firms
- Skin-on fillets preferred to skinless fillets
- Fillet sizes commonly purchased (% of firms buying that size):
  - frozen fillets: 8-10 oz. (27%), 10-12 oz. (26%), 4-6 oz. (20%)
  - fresh fillets: 8-10 oz. (33%), 6-8oz. (24%), 10-12 oz. (24%)
- Price paid in July 1996
  - frozen fillets, \$5.82 per lb. on average
  - fresh fillets, \$6.09 per lb. on average
- Frequency: weekly deliveries strongly preferred for fresh and frozen fillets
- Quantity delivered weekly:
  - frozen fillets, 29 lbs. on average
  - fresh fillets, 42 lbs. on average
- Suppliers:
  - frozen fillets: 65% from foodservice distributors, 22% from seafood wholesalers
  - fresh fillets: 68% from seafood wholesalers, 18% from foodservice distributors

#### *Walleye Purchases and Sales by Wholesalers*

- Product forms purchased and sold by seafood wholesalers (% of firms)
  - Purchases:
    - 68% frozen skin-on fillets
    - 64% fresh rounds
    - 56% fresh skin-on fillets

- Sales:
  - 87% frozen skin-on fillets
  - 70% fresh skin-on fillets
  - 43% fresh skinless fillets
- Product forms purchased and sold by seafood retailers (% of firms)
  - Purchases:
    - 57% frozen skin-on fillets
    - 43% fresh skin-on fillets
    - 36% fresh rounds
  - Sales:
    - 50% frozen skin-on fillets
    - 46% fresh skin-on fillets
    - 29% fresh skinless fillets
- Product forms purchased and sold by foodservice distributors (% of firms)
  - Purchases:
    - 73% frozen skin-on fillets
    - 47% frozen skinless fillets
    - 20% fresh skinless fillets
  - Sales:
    - 100% frozen skin-on fillets
    - 64% frozen skinless fillets
    - 27% fresh skinless fillets
- Prices paid in July 1996
  - fresh rounds, \$2.21 per lb. on average
  - frozen fillets, \$5.54 per lb. on average
  - fresh fillets, \$5.27 per lb. on average
- Sizes commonly purchased (% of firm buying that size):
  - fresh rounds: 2.0 lbs. (62%), 1.5 lbs. (19%)
  - frozen fillets: 8-10 oz. (46%), 6-8 oz. (33%)
  - fresh fillets: 8-10 oz. (29%), 17% each 6-8 oz., 10-12 oz., 16 oz.
- Frequency: weekly deliveries strongly preferred by all firm types for all product forms
- Customers of wholesale firms
  - Restaurants served by:
    - 85% of seafood wholesalers
    - 27% of seafood retailers
  - Customers served by:
    - 30% of seafood wholesalers
    - 100% of seafood retailers
  - Supermarkets served by:
    - 50% of seafood wholesalers
    - 5% of seafood retailers
    - 25% of foodservice distributors
- Product forms purchased by customers (% of firms)
  - Restaurants:
    - 27% fresh fillets
    - 54% frozen fillets
    - 12% fresh other
    - 7% frozen other
  - Consumers:
    - 52% fresh fillets
    - 27% frozen fillets

- 21% fresh other
- Supermarkets:
  - 54% fresh fillets
  - 23% frozen fillets
  - 23% fresh other

## Conclusions and Implications

- Market survey data help persons involved in walleye aquaculture to plan production, marketing, lending, research, and educational strategies
- Aquaculturists could target marketing efforts toward those firms having characteristics which appear to positively influence walleye sales
- The market views frozen fillets as an acceptable walleye product form which influences:
  - location of production facilities
  - decisions on timing of production
  - location of markets served
  - consideration of freezing technologies and storage needs
- Restaurants highly prefer fillets, so to serve this market aquaculturists will need to:
  - undertake filleting themselves, or
  - form processing and/or marketing cooperatives
- Weekly deliveries of product are highly referred which impacts:
  - marketing strategies
  - storage and technology (i.e., cryovac, IQF, etc.) considerations
- Alternative do exist in the marketplace for selling on a monthly basis, for selling fresh whole/round walleye rather than fillets; and for selling different sizes of products
  - aquaculturists will need to determine which delivery schedules, product forms, and product sizes they can produce most cost effectively
  - aquaculturists will need to shop around to find buyers willing to accommodate sellers' preferences regarding delivery schedules, product forms, and product sizes
- Aquaculturists will need to time sales for maximum profit because of seasonality in walleye supply, demand, and price
- Growth potential exist for walleye sales, especially with aquaculture
  - market penetration much less than 100%, particularly for restaurants
  - on average, firms reported that walleye purchases could increase 50% with aquaculture
  - too-high price and availability problems do appear to be issues in walleye markets, and these are issues that aquaculture could alleviate
  - wild-caught walleye is reasonably well accepted around the NCR which should ease the entrance of farm-raised products



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## Introduction

### Walleye

Walleye (*Stizostedion vitreum*) is a popular sport and eating fish in the North Central Region (NCR). U.S. commercial harvest of this species has been almost completely eliminated in favor of sport fishing. To supplement sport fisheries, millions of walleye fry are hatched and stocked each year. Commercial demand for walleye is supplied almost exclusively by Canada where walleye is the second most important commercially harvested freshwater fish (Makowiecki). Historically, U.S. harvests of walleye have been quite small compared to harvests in Canadian waters. From 1985 to 1991, U.S. commercial catch was less than one-half of 1 percent of the Canadian catch (Makowiecki). Changing ecosystems have affected traditional walleye fisheries; even Canada has not escaped reductions in walleye catch. Interest in the commercial culture of walleye in the United States has increased over the years with declining commercial fisheries and with the increasing dependence of the United States on Canadian supplies.

Walleye's popularity as a sport fish, high market value, and commercial supply problems have all contributed to its recognition as a likely candidate for aquaculture in the North Central Region. Walleye is nationally recognized as a species with significant aquaculture potential in the National Aquaculture Development Plan of 1983. When the North Central Regional Aquaculture Center (NCRAC) was launched in 1988, walleye and yellow perch received the highest priority for NCRAC financial support (Summerfelt). This high-priority status has continued throughout the 1990s and substantial research funds have been devoted to developing appropriate culture methods.

This study examines the current and potential markets for food-size walleye. Sound marketing data are needed for business planning, capital acquisition, research and extension efforts, and public policy decision making. In the early 1990s, a NCRAC-commissioned marketing study of seafood marketing channels identified walleye and yellow perch as the two aquaculture candidate species having the highest market potential (Hushak, Cole, and Gleckler). This report is a follow-up, in-depth marketing study investigating current and potential walleye markets. A previous publication focused on a market survey for yellow perch (Riepe).

### Survey Procedures

A mail survey was conducted to determine the current marketing status and potential for walleye

products in NCR wholesale and retail businesses in seafood marketing channels. Types of firms (based on Standard Industrial Classification codes) that would likely handle fish, at either the retail or wholesale level, were identified at the same time that mailing lists were explored and trade literature was reviewed. Information from all three of these activities was used to determine which types of firms would be surveyed and how they would be defined. The basic groups chosen to be surveyed included seven types:

- restaurants (defined as non-chain, non-pizza food establishments offering table service),
- supermarkets (defined by the grocery trade as grocery stores with at least \$2 million in annual gross sales),
- seafood wholesalers,
- seafood retailers,
- grocery wholesalers,
- foodservice distributors, and
- fish brokers.

Chain restaurants were excluded from the sample because of ease in mailing and the low likelihood of seafood use. Most chain restaurants are fast food or pizza restaurants and not likely to serve or purchase seafood besides the least expensive, most available ocean species. The mailing list database accessed in this study distinguished restaurants by their chain or non-chain status. Therefore, it was easier and less costly to eliminate chain restaurants entirely rather than try to determine by name alone which restaurants might ever consider serving seafood or purchasing walleye. Grocery stores too small to be considered supermarkets were also excluded from the sample because of the low likelihood that these stores would carry fresh/frozen seafood. Walleye currently are not sold on a frozen/pre-packaged/branded basis, but are marketed strictly on a fresh/frozen basis.

Five separate survey instruments were developed. The seven firm types were divided into three groups for surveying purposes:

- restaurants,
- supermarkets, and
- all others (seafood-specific wholesale and/or retail firms plus nonspecific wholesalers).

Two surveys were designed for the restaurant group and two for the supermarket group. Phase I surveys asked questions regarding firm characteristics and general fish/seafood purchasing behavior. Also included in the Phase I surveys were questions to determine which firms sold walleye in 1996 and why the others did not. Phase II surveys were sent only to those firms which had indicated in their Phase I surveys that they had sold walleye in 1996. This survey asked for specific information on purchases/sales of walleye and yellow perch. Only one survey

instrument was used for the wholesalers group because few firm characteristic questions were needed and most firms were likely to handle walleye.

All five mail survey instruments were developed during the initial project period. Overlapping questions across firm type were as identical as possible to facilitate analysis and comparison. Appropriate firm characteristic questions were developed for each group of firms. General fish/seafood purchase/sales behavior questions were asked. Questions specific to the purchase/sale of yellow perch and walleye were developed after discussion with selected wholesalers to determine general market terminology and practices. Both the general fish/seafood questions and the species-specific questions were designed to more specifically track fish through the marketing channels. One shortcoming of many fish marketing studies is that they ask survey questions about “fish” marketing behavior as if “fish” are homogenous. However, they

are not. There are dozens of species with commercial value, and each can be marketed in multiple product forms. Therefore, an attempt is made in this study to identify the marketing channels for different types of “fish.” For the Phase II surveys, identical questions were developed for walleye and yellow perch. Some questions related to the seasonality of supply and demand; other questions dealt with actual purchase/sales of specific product forms.

Each draft of the survey instruments was submitted to several survey experts for reaction/feedback. This pre-testing procedure was used in lieu of a pre-survey of potential respondents because of mailing list limitations and time constraints.

A mailing list was obtained from a private business list company, American Business Lists. Purchasing a mailing list made two things possible:

- firms from all geographic locations were included (versus only those located in large population

**Table 1. Numbers of firms (by type) existing in the North Central Region, drawn for sample, surveyed, and responding, plus response rate.**

<b>Firm Type</b>	<b>Firms Existing<sup>b</sup></b>	<b>Firms Drawn in Sample<sup>b</sup></b>	<b>Firms Surveyed<sup>b</sup></b>	<b>Firms Responding<sup>c</sup></b>	<b>Response Rate</b>
	----- number of firms -----				%
Restaurants <sup>a</sup>	65,571	7,900	6,344	643	10.1
Supermarkets <sup>a</sup>	6,932	1,733	1,574	107	6.8
Seafood Wholesalers	249	249	249	40	16.1
Seafood Retail	485	485	485	61	12.6
Foodservice Distributors	171	171	171	12	7.0
Grocery Wholesalers	831	492	492	52	0.6
Fish Brokers	13	13	13	0	0

<sup>a</sup>See text for firm type definitions used for purposes of survey.

<sup>b</sup>The numbers of firms existing and drawn for sample were based on the setup of the database of the business lists firm from which the mailing list was purchased. In the cases of restaurants and supermarkets, this did not reflect in every aspect the definition of these firm types used for this survey. As a result, the drawn sample was further narrowed as best as could be done to better reflect the firm definitions. Thus, the number of firms actually surveyed was less than the drawn sample for restaurants and supermarkets.

<sup>c</sup>Number of firms that completed and returned useable surveys.

**Table 2. Location (based on population density) of supermarkets in the North Central Region that are sellers or non-sellers of walleye.**

Population Density	Sellers (n=63)	Non-Sellers (n=26)
	----- percent -----	
Urban (Chicago, Cincinnati, etc.)	6	23
Suburban (suburb of urban city)	22	11
Mid-size metro area (city and surrounding areas with population less than one million, but greater than 100,000)	24	12
Small town/rural	48	54
<b>Total</b>	<b>100%</b>	<b>100%</b>

centers with readily available telephone books), and

- a random, representative sample of firms of each type was obtained.

Table 1 contains data, by firm type, on the number of firms sampled and surveyed.

The first batch of surveys is mailed on August 28, 1996; the final batch of mailings is completed on March 25, 1997. In general, the response rate was rather low; from less than 10 percent up to 20 percent depending on the firm type. For supermarkets the response rate was so low that another mailing and a follow-up postcard are sent about six months after the initial mailing.

Survey questions referred to a specific time period so that the timing of the mailings/response would not render the data meaningless. Since the Phase I surveys for the restaurants and supermarkets are very similar, the reasons for low supermarket response are not entirely clear. However, it did appear that there was some problem with the managers of chain stores realizing that the information sought was strictly for their individual stores. Perhaps, when surveying grocery stores, more of an effort needs to be made to explicitly deal with this issue.

## Restaurants: Profile of Walleye Servers Versus Non-Servers

Only tableservice restaurants are included in this survey. Restaurants were excluded if they:

- primarily sold pizza,
- were part of a restaurant chain, or
- only sold fast food.

The mailing list provider was not entirely able to limit the sample to fit the definition desired. Some

restaurants are excluded based on name and others because their completed survey revealed that they did not fit the definition. The number of usable restaurant surveys totaled 643. Of these, 584 responded either affirmatively (denoted as “Servers”) or negatively (denoted as “Non-Servers”) to serving walleye in 1996. Of these responding restaurants, 41 percent are Servers (n=242), while 59 percent are Non-Servers (n=342).

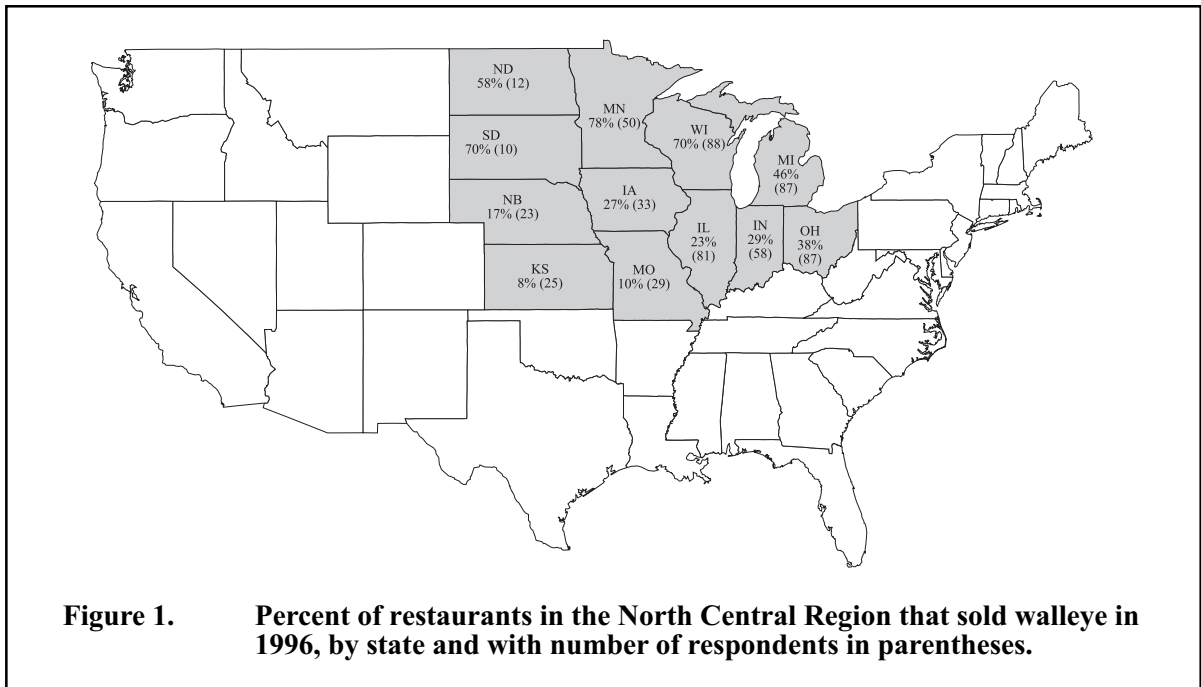
The percentage of walleye Servers among NCR restaurants is high considering that walleye is a regionally known rather than nationally known species. In comparison, only 17 percent of restaurants in the NCR reported serving yellow perch (Riepe). Apparently, the NCR market for walleye is more widespread than for yellow perch.

## Location

Three factors related to a restaurant’s location were analyzed to determine if they influence the serving of walleye, including:

- state,
- proximity to the Great Lakes, and
- population density.

The first two factors appear to play a role in influencing a restaurant’s preference for serving walleye, while the third does not. A 1991 survey of restaurants in Indiana found the same type of influence of location factors for walleye within that state (Riepe, Martin, and Schrader). Walleye is much more popular in the northern third of Indiana than in the middle or southern portions, and most popular in counties close to Lake Michigan. The relationships found in this survey between the three location factors and whether or not a restaurant serves walleye are discussed below.



### State

In the NCR, state location is a significant factor in restaurant consumption of walleye. Serving walleye in restaurants is most popular in the northern tier of states (Figure 1). Minnesota is the leading state, with more than three-fourths of its responding restaurants indicating they sold walleye in 1996. Other states with above-average percentages of walleye Servers are Wisconsin (70%), South Dakota (70%), North Dakota (58%), and Michigan (46%). The states with the smallest percentages of walleye Servers are Kansas (8%), Missouri (10%), and Nebraska (17%).

The pattern of walleye consumption in NCR restaurants is very different from that of yellow perch consumption. While the vast majority of Minnesota respondents serve walleye, none of them serve yellow perch (Riepe). This is also more or less true for the Dakotas. Wisconsin and Michigan are the only two states with above-average percentages for serving both walleye and yellow perch. The differing consumption patterns make sense from a traditional fishery perspective. Walleye sport fishing is widespread and well-known in Minnesota, other northern states, and Canada. In the Great Lakes, commercial walleye fishing has never amounted to much, while the yellow perch fishery historically has been large, particularly in Lake Erie. Yellow perch consumption, then, has been more concentrated in those areas.

### Proximity to Great Lakes

The proximity of a restaurant's location to the Great Lakes appears to positively influence whether or not

the restaurant serves walleye. Respondents were asked to indicate how close their establishment is located to one of the Great Lakes. The Great Lakes is one of the world's largest freshwater commercial and sport fisheries for many species including walleye. However, many small NCR lakes also support walleye sport fisheries. Data reveal that the closer the restaurant is located to the Great Lakes, the more likely it is to serve walleye. A substantially higher proportion of Servers (41%) than Non-Servers (27%) are located within 50 miles of the Great Lakes (Figure 2). The situation is similar for restaurants located between 51 and 100 miles from the Great Lakes. In contrast, Non-Servers had 60 percent of their group located more than 100 miles away from the Great Lakes, while the comparable figure for Servers is only 41 percent.

While data suggest that restaurants serving walleye tend to be located closer to the Great Lakes, they also suggest that serving walleye in restaurants is reasonably widespread in the NCR. Comparable data for yellow perch reveal that restaurants which serve yellow perch are much more geographically concentrated than are restaurants serving walleye. For yellow perch, 70 percent of Servers are located within 50 miles of the Great Lakes, while only 12 percent are located more than 100 miles away (Riepe).

For walleye aquaculturists, a widespread rather than concentrated restaurant market for walleye is good news. With a widespread market the alternatives for locating production facilities and marketing efforts are greatly expanded. In contrast, a geographically concentrated market would severely limit location options.

## Population Density

Population density does not have an impact on whether or not NCR restaurants serve walleye. Similar percentages of restaurants are located in urban settings, suburban settings, rural settings, etc., regardless of whether the responding restaurants are considered as an entire group or whether they are divided into Server and Non-Server groups. The percentages are roughly as follows: urban 10%, suburban 15%, smaller metropolitan areas 13%, and small town/rural 62%. Thus, 10% of all restaurants are located in urban areas as are 10% of Servers and 10% of Non-Servers. These percentages are almost identical to those for yellow perch. Thus restaurant customers do not appear to desire walleye or yellow perch any more or less if the restaurant is located in a large city or in a smaller community. Aquaculturists need not rule out any restaurant as a potential market for walleye on the basis of the population density of the restaurant's location.

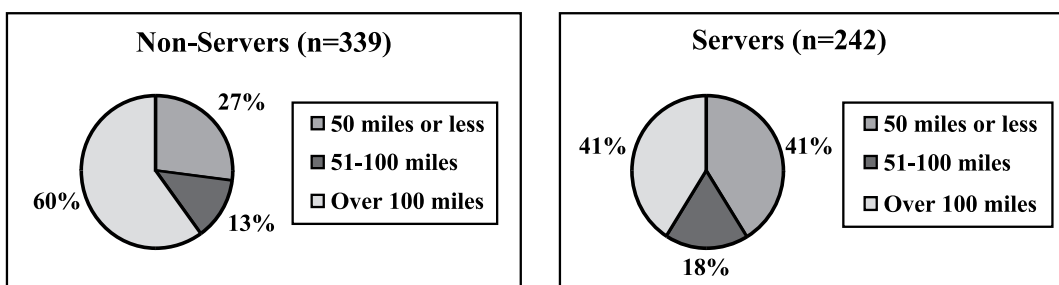
Nearly two-thirds of the responding restaurants (about 62%) are located in small town/rural areas. The common population density of a restaurant's location is decidedly different in the East Coast restaurant market. In their East Coast survey of the seafood

purchase and sales behavior of restaurants in New York and New Jersey, Gall and O'Dierno reported that only 6 percent of their responding restaurants inhabit rural locations, while 60 percent are in urban locations (Gall and O'Dierno). The difference between the East Coast and the NCR in terms of population densities of restaurant locations may strongly influence other factors related to seafood purchase and sales behavior other than preference for walleye. For this reason, seafood survey data for East Coast restaurant markets, while more abundant, may not be applicable to NCR markets.

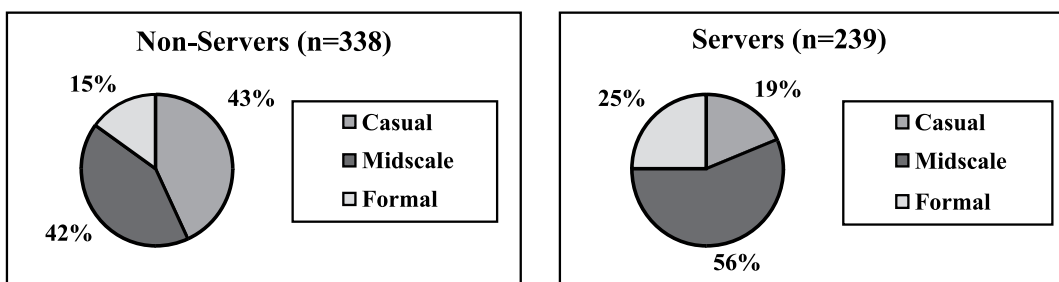
## Menu Theme

The menu themes of Servers and Non-Servers of walleye are more alike than different. More than one-half of each group reported their primary menu theme as "American" (58% Servers, 63% Non-Servers). More Non-Servers than Servers serve ethnic food, but the percentages are close (19% Non-Servers vs. 14% Servers).

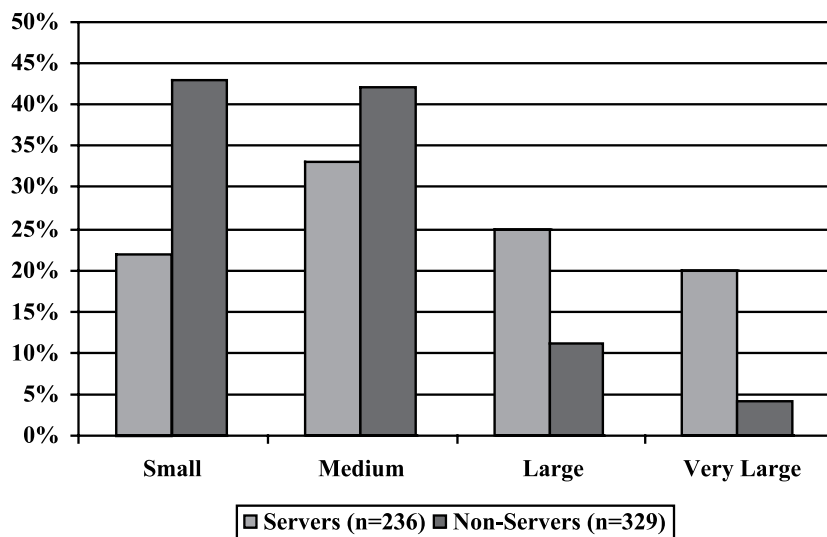
The only menu theme where walleye Servers are significantly underrepresented is "Steak." The proportion of Non-Servers reporting their menu theme as "Steak" is more than double the percentage



**Figure 2. Proximity to Great Lakes of restaurants in the North Central Region that are servers or non-servers of walleye.**



**Figure 3. Formality (based on average dinner check per person) of restaurants in the North Central Region that are servers or non-servers of walleye.**



**Figure 4. Size (based on annual gross sales) of restaurants in the North Central Region that are servers or non-servers of walleye.**

for Servers (5.9% Non-Servers vs. 2.5% Servers). The only menu themes where walleye Servers are significantly overrepresented are “Seafood” and “Steak/Seafood Combination.” More than double the percentage of Servers than Non-Servers reported one of these menu themes as their primary theme (23% Servers vs. 9% Non-Servers). The menu theme of a particular restaurant should not eliminate that restaurant as a potential walleye market.

### Formality

People who dine at restaurants that serve walleye tend to spend more money per person, indicating a more expensive menu and more formal ambiance for walleye servers. Categorization of restaurants by the amount of the average dinner check is standard in the restaurant industry. The categories used in this survey are: less than \$8 (Casual); \$8 to \$14.99 (Midscale); and \$15 or more (Formal). Only 19 percent of Servers could be classified as “Casual” versus 43 percent of Non-Servers (Figure 3). At the other end of the spectrum, one-fourth of the Servers (25%) are “Formal” as opposed to only 15 percent of Non-Servers.

### Size

Survey data indicate a strong relationship between restaurant size and whether or not walleye is served.

Larger restaurants are more likely to serve walleye. Restaurants reporting gross annual sales of \$250,000 or less are classified as “Small.” Those with annual sales between \$250,001 and \$500,000 are classified as “Medium.” “Large” restaurants reported gross sales between \$500,001 and \$1 million. Restaurants with gross sales over \$1 million are considered “Very Large.” Almost one-half of the Servers (45%) fall into the “Large” or “Very Large” categories (Figure 4). The comparable figure for Non-Servers is substantially smaller (15%). On the other hand, close to one-half of the Non-Servers (43%) belong in the category “Small” as opposed to one-fifth of the Servers (19%). Walleye marketing efforts could be focused first on larger restaurants, which tend to be pricier or are moderately-priced with a full-service menu.

### Presence of Seafood on Menu

Responding restaurants were asked to indicate the approximate percentage of their total food sales that come from seafood sales. Means were calculated based on the percentages reported by respondents. Not surprisingly, restaurants serving walleye have a higher proportion of seafood sales than do Non-Servers (28% vs. 18%).

### Best Selling Seafood Species

Best selling seafood species of both Servers and Non-Servers of walleye are similar. (Respondents

were allowed to list up to five species.) Shrimp is popular in virtually all responding restaurants (75%), with cod a top seller in about one-half of all restaurants. Salmon is the third best seller among both Servers and Non-Servers. Several other species are popular among both groups including pollock, tuna, catfish, orange roughy, crab, and lobster.

The most notable difference in best selling species between the walleye Servers and Non-Servers is the presence or absence of regional freshwater fish. Restaurants in the walleye Servers group have three regional favorites among their best sellers, including:

- walleye (31%),
- yellow perch (21%), and
- lake whitefish (13%).

None of these are popular in restaurants that do not serve walleye. There are a couple of other differences in best selling species between walleye Servers and Non-Servers. Shellfish are more popular among Servers, while catfish is more popular among Non-Servers.

## Supermarkets: Profile of Walleye Sellers Versus Non-Sellers

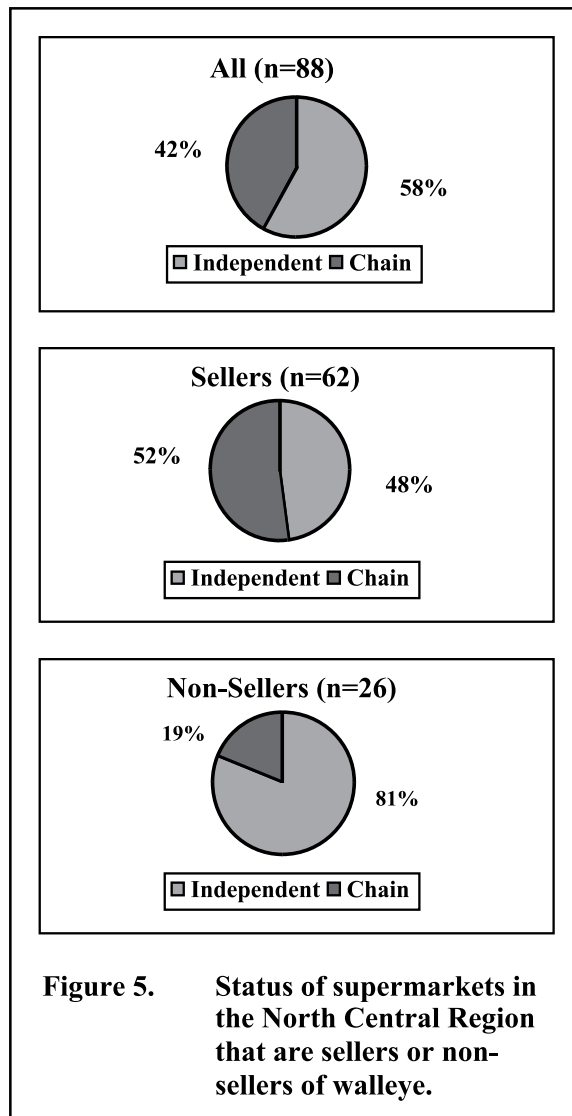
For the purposes of this survey, the only retail grocery stores included were supermarkets. While virtually every grocery store carries seafood of the frozen/pre-packaged/branded kind such as Gorton's or Mrs. Paul's, only stores of supermarket size are likely to carry fresh/frozen seafood. This is particularly true of a higher-valued, regional species like walleye. The grocery trade defines supermarkets as retail grocery stores having \$2 million or more in annual gross sales. The firm which produced the mailing list was not able to limit the mailing list to supermarkets. Therefore, more than one-half of the completed surveys received could not be used because the grocery stores did not fit the supermarket definition. However, responses showed that, as expected, these non-supermarket stores rarely sell any fresh or frozen seafood.

There were 107 usable supermarket surveys returned. Of these, 89 reported that they either sold walleye in 1996 (Sellers) or did not (Non-Sellers). More than two-thirds (71%) of these supermarkets reported that they did sell some walleye in 1996 (n=63). This is a much higher proportion than the 41% of restaurants that reported selling walleye. In contrast, only 26% of responding supermarkets sold yellow perch (Riepe). Supermarket Non-Sellers of walleye account for only 29 percent of respondents (n=26). Because the actual number of usable surveys is relatively small, the survey data reported below may not accurately reflect all NCR supermarkets.

## Status

Supermarkets are often classified as either independent or part of a chain. Unfortunately, the grocery industry definition of "chain" (11 or more stores under the same ownership) is rather arbitrary and outdated. As a result, the meaningfulness of the label "chain" is questionable. Nevertheless, much grocery industry data are subdivided based on whether a supermarket is part of a chain or not. Accordingly, respondents to the supermarket survey were asked the status of their store.

Data show that supermarket status does influence the decision to sell walleye. There are marked differences in the proportions of chain stores and independent stores between Sellers and Non-Sellers (Figure 5). The Non-Sellers group is largely made up of independents (81%), while the Sellers group is



**Figure 5. Status of supermarkets in the North Central Region that are sellers or non-sellers of walleye.**

almost evenly split between chains (52%) and independents (48%). This is a very different result than is found for yellow perch, where Sellers and Non-Sellers had similar proportions of chains and independents (Riepe). The bottom line for aquaculturists attempting to market walleye is that most supermarkets are already handling wild-caught walleye and would likely be interested in farm-raised walleye. A majority of both chain stores and independent stores sell walleye; however, the proportion of chain stores that are Sellers is considerably larger (86% chain vs. 59% independent). Therefore, the likelihood that a chain supermarket would be a good walleye market is also higher.

### Location

In contrast to restaurants, location does not appear to play a significant role in influencing supermarket preference for selling walleye. However, the apparent lack of significance could be related to the small database. Further marketing studies of supermarkets are needed to clarify significant and non-significant influences on walleye sales. Survey data for the three location factors and their relationship to supermarkets selling walleye are discussed below.

### State

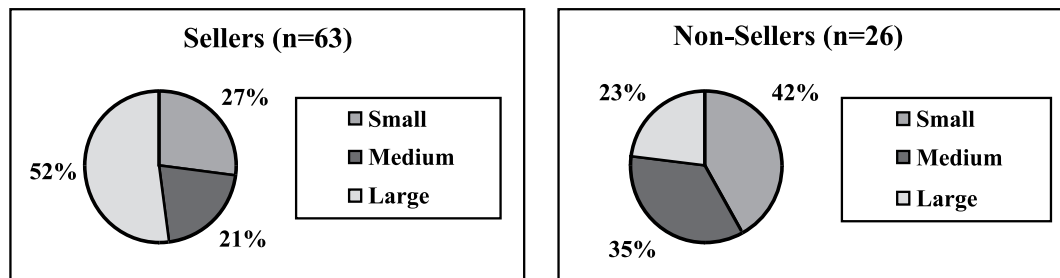
Because of the small number of responding supermarkets, it is impossible to make an accurate determination of the influence of state location on the selling of walleye in supermarkets. Dividing the sample by 12 states left half of the states with less than 10 respondents each. It seems likely that state location is not generally a strong influence, although there may be individual exceptions. For states with at least 10 respondents, each had between 70 and 80 percent of the responding supermarkets reporting that they had sold walleye in 1996 (average for all respondents is 71%).

### Proximity to Great Lakes

While supermarkets selling yellow perch tend to be located close to the Great Lakes, those selling walleye are dispersed throughout the NCR. Similar proportions of both Sellers and Non-Sellers of walleye are located within 50 miles of the Great Lakes (about 38%). Percentages of supermarkets located more than 100 miles from the Great Lakes are also similar for Sellers and Non-Sellers (about 43%). Supermarkets are equally likely to sell walleye whether or not they are located near the Great Lakes. In contrast, survey data on restaurants selling walleye show a positive relationship between proximity to the Great Lakes and serving walleye. Supermarkets located virtually anywhere in the NCR can be viewed by aquaculturists as potential markets for farm-raised walleye.

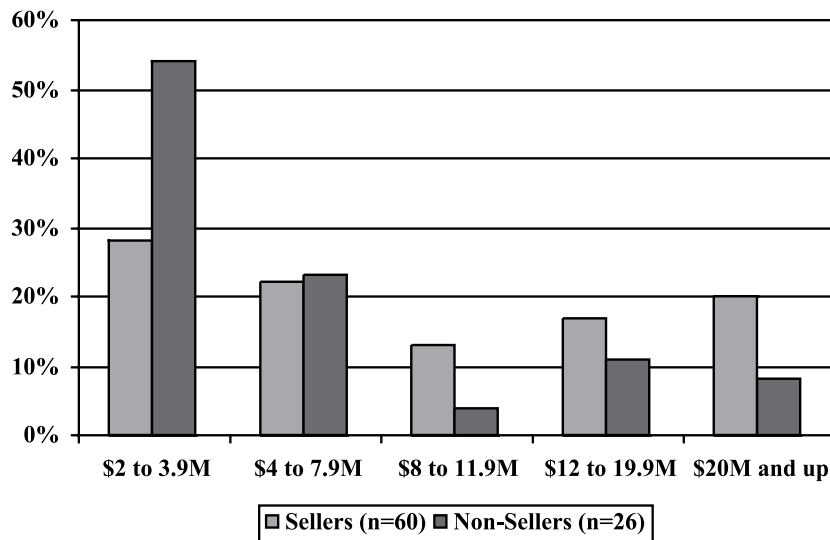
### Population Density

The relationship between the population density of a supermarket's location and whether or not a supermarket sells walleye is unclear. There is no clear association between a higher (or lower) density and the likelihood of a supermarket selling walleye. Non-Sellers of walleye tend to have a slightly higher percentage of supermarkets located in rural areas than Sellers (54% Non-Sellers vs. 48% Non-Sellers). Walleye Sellers have a higher percentage (24% Sellers vs. 12% Non-Sellers) of supermarkets located in mid-size metropolitan areas (i.e., Dayton, Ohio or Lafayette, Indiana). Sorting out "Urban" versus "Suburban" can be difficult. Taken together, the percentage of Non-Sellers in these locations is similar to but slightly higher than the percentage of Sellers (33% Non-Sellers vs. 28% Sellers). However, when considered separately, the percentage of supermarket managers that classified their store location as "Urban" is substantially higher for Non-Sellers (23% Non-Sellers vs. 6% Sellers). Suburban locations are more frequent among sellers (11% Non-Sellers vs.



**Figure 6. Store size (based on total square footage) of supermarkets in the North Central Region that are sellers and non-sellers of walleye.**





**Figure 7. Store size (based on annual gross sales) of supermarkets in the North Central Region that are sellers or non-sellers of walleye.**

22% Sellers). A better measure of the customer base for selling walleye in supermarkets may be income level per person rather than population density. Further research is needed to examine the relationship between per capita income in the area served by the supermarket and the likelihood of a supermarket selling walleye.

### Size

Two different questions were asked in the supermarket survey regarding the size of the supermarket. Total square footage is one measure of size. Supermarkets selling walleye tend to be larger in physical size than supermarkets that do not sell walleye (Figure 6). “Large” supermarkets are defined as those having more than 30,000 square feet – the industry definition of a superstore. Slightly over one-half (52%) of the Sellers are in this category, while less than one-fourth (23%) of the Non-Sellers are. “Small” is defined as 15,000 square feet or less. A much smaller percentage of Sellers, as compared to Non-Sellers, belong in the “Small” category. As supermarket square footage increases, so does the likelihood of selling walleye.

Typical grocery trade data categories, based on annual gross sales, are also used to determine supermarket size. Using this definition of size, supermarkets that sell walleye, again, tend to be larger than those that do not. One-half of walleye Sellers reported annual gross sales of \$8 million or more, compared to about one-fourth (23%) of Non-Sellers (Figure 7). The

percentages of Sellers in the smaller gross sales categories are lower than the percentages of Non-Sellers. Data on the association between larger store size and the selling of walleye suggest that an aquaculturist might focus a search for potential grocery store markets on larger stores.

### Characteristics of Seafood Departments

Two of the characteristics of seafood departments that are considered important in the grocery trade are:

- the type of service provided (full-service vs. self-service) and
- the square footage allocated to the department.

For each of these characteristics, significant differences are found between Sellers and Non-Sellers of walleye.

### Type of Seafood Service

Supermarkets which sell fresh/frozen seafood offer seafood to their customers either through:

- a full-service counter,
- self-service, or
- some combination of the two.

Respondents were asked to indicate whether full-service or self-service best describes the type of service they offer. The survey data indicate that whether a supermarket primarily offers full-service or self-service does have a significant influence on whether or not that supermarket sells walleye. Sellers

of walleye are much more likely (59% vs. 41%) to offer full- rather than self-service (Figure 8). On the other hand, more than two-thirds (71%) of non-sellers provide only self-service.

### Space Allocation

Another important seafood department characteristic is how much space has been allocated to the seafood department. Respondents were asked the square footage of their store's seafood department. The square footage for seafood departments in walleye Sellers is substantially higher than the square footage for Non-Sellers. This is true both in terms of average square footage (121 sq. ft. for Sellers vs. 58 sq. ft. for Non-Sellers) and median square footage (32 sq. ft. for Sellers vs. 18 sq. ft. for non-sellers). The search for potential walleye customers among supermarkets could be narrowed by focusing on those supermarkets offering full-service for seafood and/or with a relatively large seafood department.

### Top Selling Seafood Species

Supermarket managers were asked to list the five best selling fish/seafood species in their stores. Three-fourths of the best selling species are the same for both walleye Sellers and Non-Sellers. Catfish and shrimp were reported as top selling species by more than 50 percent of supermarkets in each group. Other top selling species include:

- salmon,
- orange roughy,
- cod,
- pollock,
- ocean perch,
- haddock,
- hake/whiting,
- lake whitefish, and
- trout.

While "salmon" is a combination of both lake and

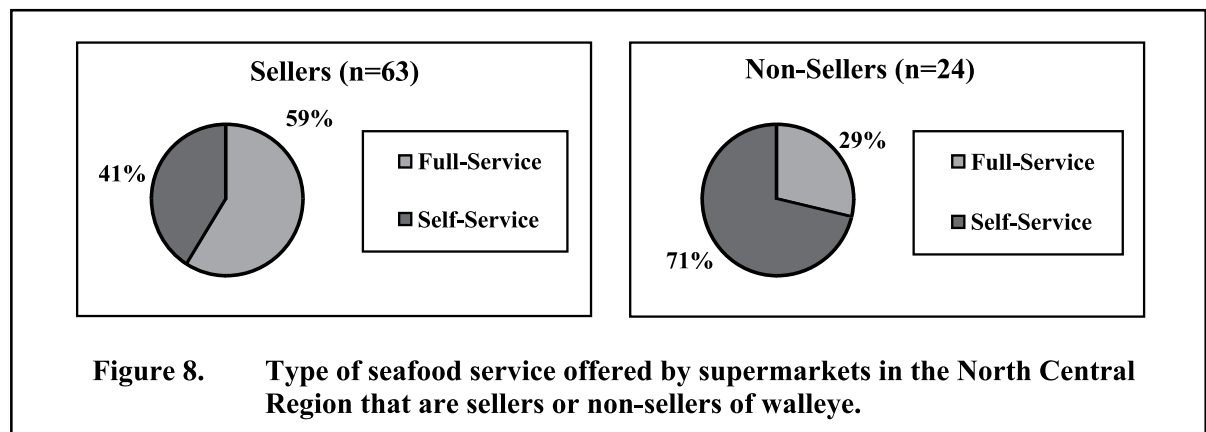
ocean varieties, lake salmon alone is a best seller in about 15 percent of supermarkets in both groups. Walleye is not one of the best selling species in supermarkets that sold any walleye in 1996. However, both Sellers and Non-Sellers sell several regional freshwater fish including lake salmon, lake whitefish, trout, yellow perch, and bass.

### Species Decisionmaker

Respondents were asked to indicate, from a list provided, whether the person who decided which seafood species to sell in that particular store is located in that store or elsewhere, and whether the choice is unlimited or restricted to species on a list provided by a corporate buyer. Somewhat more external control over species choice is indicated by Sellers than by Non-Sellers. A higher percentage of Non-Sellers (77%) than Sellers (63%) reported that either the store manager or the seafood manager makes an unrestricted choice of species (Table 3). Twelve percent of Sellers reported that a central (corporate) buyer makes the decision about which species to sell in that store, while the comparable figure for Non-Sellers is zero. Similar proportions of Sellers and Non-Sellers indicated that a store decisionmaker makes a restricted species choice based on a list of alternatives provided by a corporate buyer. For those stores where species decisionmaking is external to the store or where walleye is not on the approved list, an aquaculturist would have to sell walleye first to the corporate/central decisionmaker and, in some cases, again to the store-level decisionmaker.

### Seafood Supplier Decisionmaker

Respondents are asked to indicate, from the same list of possibilities used for species decisionmaker, who the decisionmaker for their store is regarding choice of seafood supplier. The selection of a seafood



**Table 3. Species decisionmaker in supermarkets in the North Central Region that are sellers or non-sellers of walleye.**

Decisionmaker	Sellers (n = 60)	Non-Sellers (n = 26)
	----- percent -----	
Store Manager	12	31
Store Seafood Manager	51	46
Central/Corporate Buyer	12	0
Store Decisionmaker (based on list of alternatives from Central Buyer)	22	23
Other	3	0
<b>Total</b>	<b>100%</b>	<b>100%</b>

**Table 4. Seafood supplier decisionmaker in supermarkets in the North Central Region that are sellers or non-sellers of walleye.**

Decisionmaker	Sellers (n = 61)	Non-Sellers (n = 26)
	----- percent -----	
Store Manager	16	39
Store Seafood Manager	33	31
Central/Corporate Buyer	36	15
Store Decisionmaker (based on list of alternatives from Central Buyer)	10	15
Other	5	0
<b>Total</b>	<b>100%</b>	<b>100%</b>

supplier is more external, or more restricted, than the selection of species, especially among Sellers. Only 49 percent of the Sellers reported that a store manager makes an unrestricted supplier choice (Table 4). This unrestricted choice is made by 70 percent of Non-Sellers, however. The percentages of central (corporate) buyers making seafood supplier decisions increased for both Sellers and Non-Sellers from the percentages for decisions on species choice. For Sellers, the percentage increased from 12 to 36 percent, and for Non-Sellers, from 0 to 15 percent. On the other hand, the percentages dropped for a store decisionmaker making a restricted supplier choice based on a list of alternatives provided by a central

buyer. Individual aquaculturists could potentially face more obstacles in becoming approved as reliable seafood suppliers of quality products than in actually selling supermarkets on farm-raised walleye.

### **Wholesalers: Profile of Walleye Sellers Versus Non-Sellers**

In this study, wholesalers that typically sell to grocery stores (grocery wholesalers) or restaurants (foodservice distributors) were included in the survey along with seafood wholesalers and retailers. The purpose for including them was to obtain data regarding the extent to which these firms handle

seafood, specifically walleye. From a practical point of view, it is very difficult to determine the behavior of grocery wholesalers and foodservice distributors because of their diversity and the unclear connections between wholesale and retail firms.

Firms which primarily sell seafood directly to consumers were included in the wholesaler group because they were perceived to be, in their seafood purchase and sales behavior, much more like seafood wholesalers than grocery stores. Compared to restaurants and supermarkets, there are few wholesalers of any type located in the NCR. The number of useable surveys returned from firms of each firm type is small (See Table 1). Therefore, caution is advised in interpreting and using these survey results.

### Seafood Sales Characteristics by Firm Type

The extent of seafood sales varies tremendously by firm type. Significant percentages of both grocery wholesalers and foodservice distributors sell no or very little seafood (Table 5). Many only sell the frozen, pre-packaged, branded kind such as Gorton's or Mrs. Paul's. However, 40 percent of the foodservice distributors and 16 percent of the grocery wholesalers did report selling fresh and/or frozen fish. The firms in these two groups that sell seafood do not sell much seafood compared to their total volume of food sales. Regarding walleye sales, only 5 percent of grocery wholesalers reported selling this species in

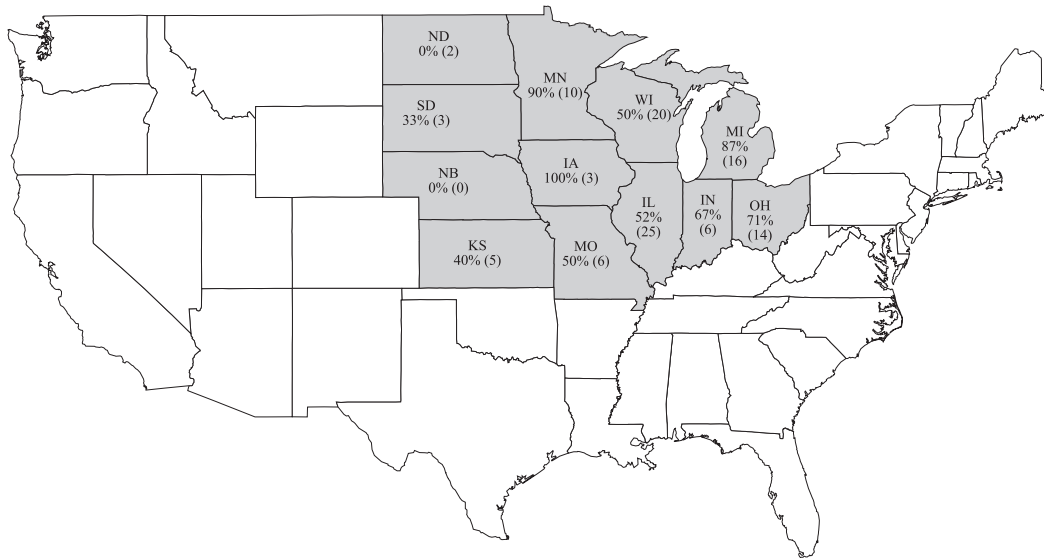
1996, while 41 percent of foodservice distributors indicated they had done so. Fifty-two percent of seafood wholesalers and 68 percent of seafood retailers reported selling walleye in 1996. These data indicate that foodservice distributors could be good markets for farm-raised walleye along with seafood wholesalers and retailers. Based on market penetration (percent of firm type that sold walleye in 1996), marketing efforts could begin with the firm type with the highest penetration (seafood retailers), it seems unlikely that grocery wholesalers would be worth investigating because of the low percentage handling fresh/frozen seafood of any species as well as the very limited number handling walleye. In the next paragraphs, differences between walleye Sellers versus Non-Sellers are profiled. Data on why firms do not sell walleye are presented in the next major section.

### State Location

Eighty-three percent of all responding seafood wholesalers and retailers are located in the six states bordering the Great Lakes. The proportions of firms selling walleye in 1996 did differ among the Lake States (Figure 9). Considering only those states with 10 or more respondents (Illinois, Wisconsin, Michigan, Ohio, and Minnesota), Minnesota has the highest percentage of respondents selling walleye (90%) followed by Michigan (87%) and Ohio (71%). Illinois and Wisconsin have the largest numbers of firms overall, but only about one-half of them sold walleye

**Table 5. Fish/seafood sales characteristics of wholesale firms in the North Central Region.**

	----- Firm Type -----			
	Seafood Wholesalers (n=50)	Seafood Retailers (n=41)	Foodservice Distributors (n=37)	Grocery Wholesalers (n=37)
	-----percent-----			
Type of Fish/Seafood Sold:				
Fresh and/or Frozen	98	95	40	16
Only Frozen/Prepackaged/ Branded (such as Gorton's, or Mrs. Paul's)	2	5	22	38
Do Not Sell Fish/Seafood	0	0	38	46
Percent of Total Food Sales From Fish/Seafood	92	74	8	11
Percent Selling Walleye	52	68	41	5



**Figure 9.** Percent of responding wholesalers that sold walleye in 1996, by state and with number of responding firms in parentheses.

in 1996.

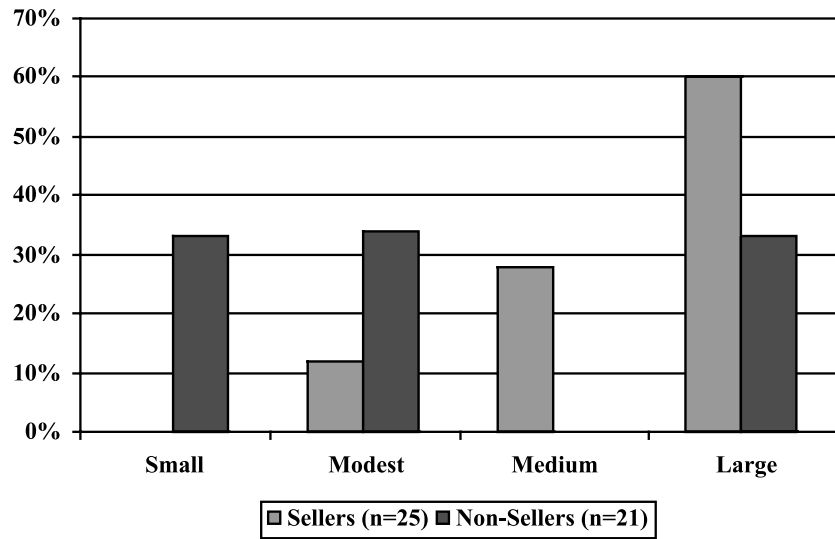
There are differences among the states in firm type as well. Illinois and Wisconsin each have large numbers of seafood wholesalers and retailers, while Michigan's responding firms are predominately seafood retailers. Minnesota only has 10 responding firms, but seafood wholesalers, seafood retailers, and foodservice distributors are about equally represented. One-half of the responding firms located in Ohio are seafood wholesalers, with the remainder split between seafood retailers and foodservice distributors. Indiana and each of the six non-Lake States had fewer than 10 responding firms of any type. Coupling these data with the state location data for restaurants suggests that farm-raised walleye marketing efforts would be most likely to meet with success in Minnesota and Michigan, followed by Wisconsin and Ohio, and trailed by Illinois and Indiana. These are the states having relatively higher proportions of firms selling walleye as well as a larger number of firms altogether. Other states have either few firms (e.g. North Dakota) or low percentages (e.g. Missouri) or both. Therefore, marketing efforts could be focused on the states having firms with a high likelihood of selling walleye.

### Firm Size

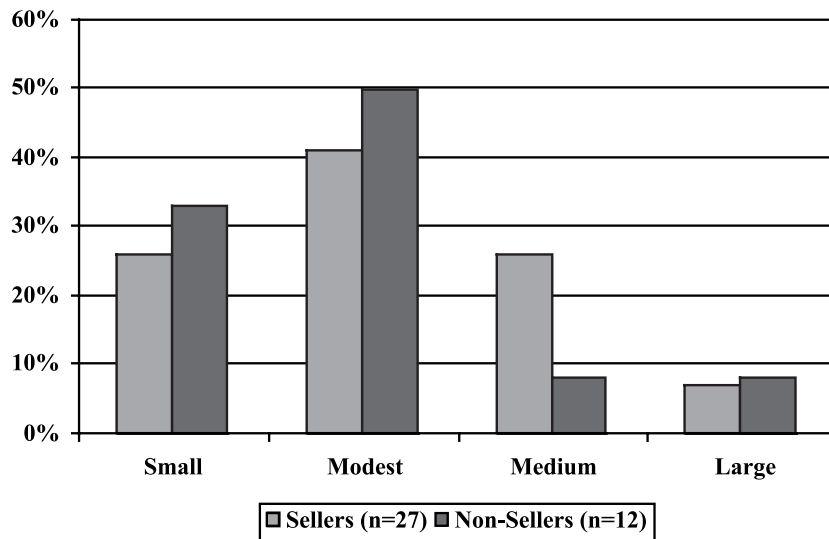
Average firm size, based on annual total food sales, appears to be larger for walleye Sellers in contrast with Non-Sellers. Firms with annual total food sales up to \$100,000 are defined as "Small," while firms

with sales between \$100,001 and \$500,000 are considered "Modest." "Medium"-sized firms reported sales between \$500,001 and \$1 million, while sales over \$1 million classify a firm as "Large."

For seafood wholesalers, there is a dramatic difference in the distribution of firms among the size categories. For instance, more than one-half (60%) of Sellers but only one-third (33%) of Non-Sellers fit the definition of "Large" (Figure 10). In contrast, two-thirds (67%) of Non-Sellers belong in the "Small" or "Modest" categories, while only 12 percent of Sellers do so. The size distribution of seafood retail firms, however, is fairly similar between walleye Sellers and Non-Sellers. Nonetheless, the Sellers tend to be larger, on average. While two-thirds of Sellers fit into the "Small" or "Modest" categories, the percentage for Non-Sellers is significantly larger, 83 percent (Figure 11). Likewise, the proportion of "Medium" and "Large" Sellers is double the proportion of Non-Sellers (33% Sellers vs. 16% Non-Sellers). Foodservice firms also appear to follow the pattern of larger firms being Sellers and Non-Sellers being somewhat smaller. However, there are not enough data to draw a definitive conclusion. For whatever reason, firm size generally tends to be a factor in whether or not a firm sells walleye. Therefore, marketing efforts could be directed towards larger wholesale firms



**Figure 10.** Size (based on annual total food sales) of seafood wholesalers in the North Central Region that are sellers or non-sellers of walleye.



**Figure 11.** Size (based on annual total food sales) of seafood retailers in the North Central Region that are sellers or non-sellers of walleye.

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## Product Form of Seafood Purchases/Sales

Respondents are asked to indicate what percentages of their firm's fish/seafood purchases are:

- live,
- fresh,
- frozen,
- previously frozen, and
- frozen/pre-packaged/branded.

Responses tend to be similar between seafood wholesalers and retailers, and between the Sellers and Non-Sellers of these two firm types. Virtually all purchases are of live, fresh, or frozen products. Some differences in purchases by product form are evident. Seafood wholesalers predominately purchase live and/or fresh products (64% of Sellers and 75% of Non-Sellers). Non-Sellers purchase a substantially larger proportion of live products, but this appears to come at the expense of fresh products. Sellers tend to purchase more frozen products than Non-Sellers. For seafood retailers the pattern of product form purchases is nearly identical to that for seafood wholesalers. However, the percentages of purchases of live and/or fresh products are almost the same between Sellers and Non-Sellers, and much lower than for seafood wholesalers. Once again, Non-Sellers have a substantially higher proportion of live purchases. The percentages for Sellers, whether they are seafood wholesalers or retailers, are more similar to each other than to the percentages of the Non-Sellers within their respective firm types. The limited data for foodservice distributors points to frozen and frozen/pre-packaged/branded products accounting for most seafood purchases. It also appears that Sellers tend to buy most products frozen, while the Non-Sellers purchase products mainly of the frozen/pre-packaged/branded kind.

These data on purchased product forms have a couple different implications for aquaculturists. On the one hand, walleye aquaculturists need to know whether various firm types are more likely to purchase live, fresh, or frozen products. Data from this survey show that seafood sales to seafood retailers and wholesalers are more likely to be fresh than live or frozen, but frozen is not out of the question. Foodservice distributors, however, deal almost exclusively with frozen seafood. On the other hand, aquaculturists need information on the firm characteristics which tend to be associated with walleye sales. Data from this survey suggest that aquaculturists could narrow their marketing efforts to seafood wholesalers and retailers that do not make many live seafood purchases if this information is known beforehand to the aquaculturist.

## Top Selling Seafood Species

There are no distinctive patterns for the best selling species between Sellers versus Non-Sellers of walleye or between seafood wholesalers and seafood retailers. Shrimp, salmon, and catfish tend to dominate as top selling species. An assortment of freshwater fish such as lake whitefish, lake salmon, yellow perch, bass trout, lake buffalo, lake herring, drum, sturgeon, carp, white perch, and lake catfish tend to appear on almost every group's best selling species list. Walleye is one of the top four best selling species for both seafood wholesalers and retailers who are Sellers. The top selling species among foodservice distributors appear to be different, although shrimp, salmon, and catfish are top selling species for this firm type too. Cod is a much more prominent species for foodservice distributors. Ocean species rather than freshwater species tend to be on their list. However, one-half of the foodservice Sellers reported walleye as one of their five best selling species and 20 percent reported yellow perch as a best seller.

## Reasons Why Firms Do Not Sell Walleye

All respondents were asked to indicate whether or not they sold walleye in 1996. Those who did not sell any walleye in 1996 were given a list of possible explanations and asked to check which of those explanations are applicable in their specific situation. The number of firms reporting that they did not sell walleye in 1996 (see Table 6) is so low for most firm types, that it is difficult to generalize, with any level of certainty, about their answers to the "why not walleye" question. Only restaurants had substantial numbers of Non-Sellers.

Focusing only on the restaurant respondents, one-third of the respondents reported that one reason they did not sell walleye in 1996 is because walleye is either too expensive or not available. This type of response suggests:

- 1) that there is a supply problem and price problem for walleye, and
- 2) that if the availability and/or price of walleye improved, these firms might then be candidates for walleye sales.

About one-half of the restaurant respondents indicated that there is no/low demand by their customers for this particular species. Taking this response at face value, one might assume that this 50 percent of firms should not be expected to sell walleye even if the supply/price situation improved through aquaculture.

However, it is impossible to accurately sort out all the varied logic causing no/low demand. To the extent that higher-than-desired price is driving the lack of customer demand, lower prices for walleye could cause some increase in demand even among these firms. However, lack of customer demand for walleye could also be related to customer income levels, customer tastes and preferences (especially for walleye versus all other menu items), and prices of other entrees.

are somewhat different between surveys for restaurants and wholesalers because of the assumption that wholesalers are likely to purchase and sell a greater number of product forms than restaurants and have a greater number of customer types. However, much of the data are essentially similar. For the purposes of this section, "wholesalers" includes all seafood wholesalers, seafood retailers, grocery wholesalers, and foodservice distributors that reported selling walleye in 1996.

## Data on Walleye Purchases and Sales

Firms which reported selling walleye in 1996 were asked to complete several specific questions pertaining to the specifics of their walleye purchases and sales. Supermarkets are not included in this because of the low response rate for this firm type. The questions

## Seasonality

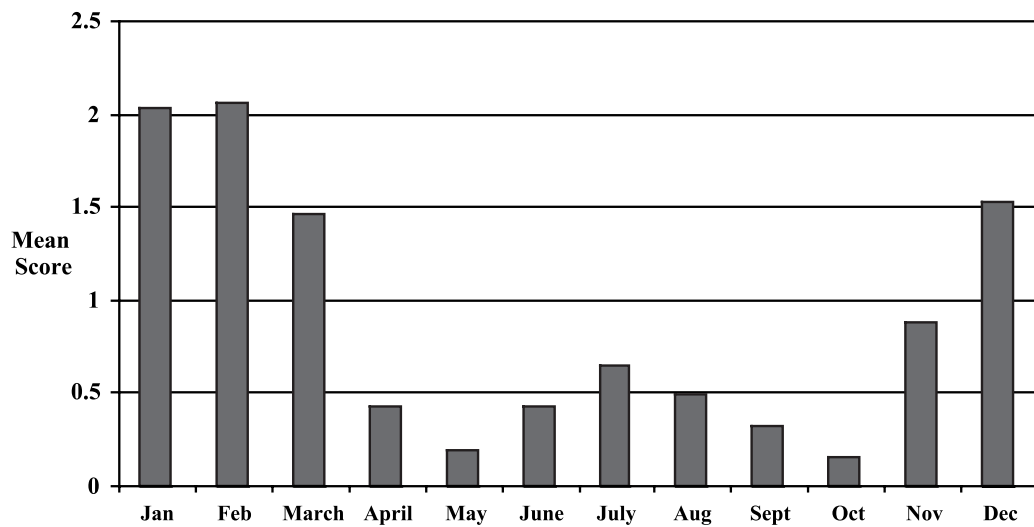
Wholesalers and restaurant managers were asked questions regarding the seasonality of prices paid for walleye, the demand for walleye products, and in the case of the restaurants, of the supply of walleye products. Respondents were asked to rank the four months of the year in which the demand for walleye (quantity sold) is usually highest. Subsequent ques-

**Table 6. Reasons why firms in the North Central Region did not sell walleye in 1996, by firm type.**

Reason	Seafood Wholesalers (n=19)	Seafood Retailers (n=11)	Grocery Wholesalers (n=9)	Foodservice Distributors (n=5)	Restaurants (n=340)	Supermarkets (n=25)
----- percent -----						
No/Low Customer Demand	37	45	89	80	55	52
Too Expensive	0	36	11	20	22	36
Not Available	21	18	11	0	11	12
Available, but supply inconsistent	0	18	11	0	4	4
Available, but quality inconsistent	0	18	0	0	4	4
Other	63	18	11	0	14	8

<sup>a</sup>Percentages in each column sum to more than 100 percent. Respondents were allowed to check any or all reasons that applied to their situation.





**Figure 12. Seasonality of wholesale price paid for walleye by wholesalers: Mean score by month based on wholesalers' ranking of top four months when price is highest (n=49).**

tions requested similar information for months of highest supply (restaurants only) and highest wholesale price paid. For each factor (price, demand, and supply), a mean score was developed, based on the responses, for each month that accounted for the various rankings given for that month. The mean score for each month was calculated by assigning a value to each ranking for that month, then summing the values and dividing by the number of respondents.

Assignment of values was as follows:

- “1” — 5.0,
- “2” — 4.0,
- “3” — 3.0,
- “4” — 2.0, and
- “X” — 1.0.

Since several respondents simply marked four months with an “X” rather than rank them, these “rankings” were assigned the lowest value rather than be disregarded altogether. The calculation of mean scores makes it possible to accurately compare monthly rankings, with a higher score indicating higher price, demand, or supply in that month (as perceived by respondents, on average). Mean scores are presented and discussed in the following paragraphs and figures.

It is evident from the graphs that there is seasonality in the price, demand, and supply of walleye. However, the annual cycles do not follow identical paths. Aquaculturists need to be aware of these seasonal

fluctuations in order to more profitably time their production and sales. Each aquaculturist will need to work with individual wholesale and retail firms to determine the most opportune time to market walleye to them based on the ever-changing supply, demand, and price situation faced at a specific point in time by a specific firm. Customized timing is one element of successful niche marketing.

The majority of responding wholesalers ranked the winter months as the months when wholesale price paid for walleye is highest, especially January and February (Figure 12). A very modest price spike seems to occur during the summer months of June, July, and August. There appears to be an annual wholesale price cycle. Prices are highest during the winter months when there is less commercial fishing activity, then drop off in the spring, particularly in April. Prices recover slightly during the summer season, and then fall back to lower levels during the autumn months before increasing in November and December.

Seasonal variation in the prices paid by restaurants for walleye follows the same general cycle as for wholesalers, but the ups and downs are much less drastic (Figure 13). Restaurants seem to face only mild fluctuations in price from month to month and from season to season, since there is less agreement on which four months of the year have the highest prices. The smoothing of cyclical fluctuations in food

commodity prices is common as the food moves from the producer toward the consumer. This generally reflects adjustments in the marketing margin. Apparently, the fish/seafood market is no different. Because of variations in marketing margins, aquaculturists may find that on a yearly basis they can make more profit from wholesale firms than retail firms, or the other way around, depending upon marketing arrangements including:

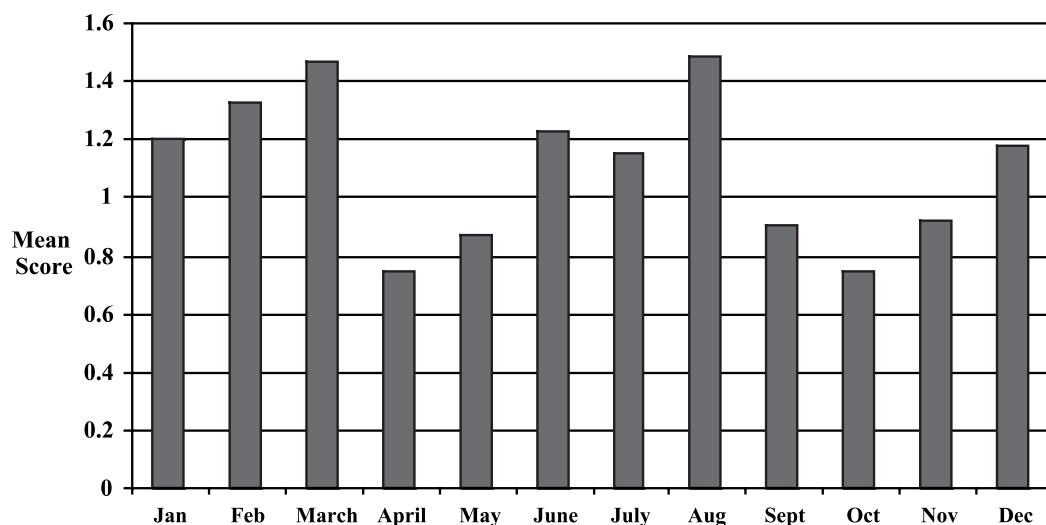
- prices,
- timing,
- quantity,
- frequency of delivery, and
- product form.

Demand (or more precisely, the quantity demanded or sold) for walleye faced by wholesalers appears to follow a different and less volatile seasonal cycle than price (Figure 14). Wholesalers on average judge demand by customers to be highest in February, March, and April (particularly March). Following this high point, each successive three-month set has increasingly lower walleye demand. Demand in May, June, and July is much lower than in February through April. Demand in August, September, and October is lower still. Demand is perceived to be lowest in November, December, and January. Fluctuations in customer demand for walleye appear to be much smaller than fluctuations in prices paid for walleye. There is much less agreement among wholesalers on which months customer demand is highest.

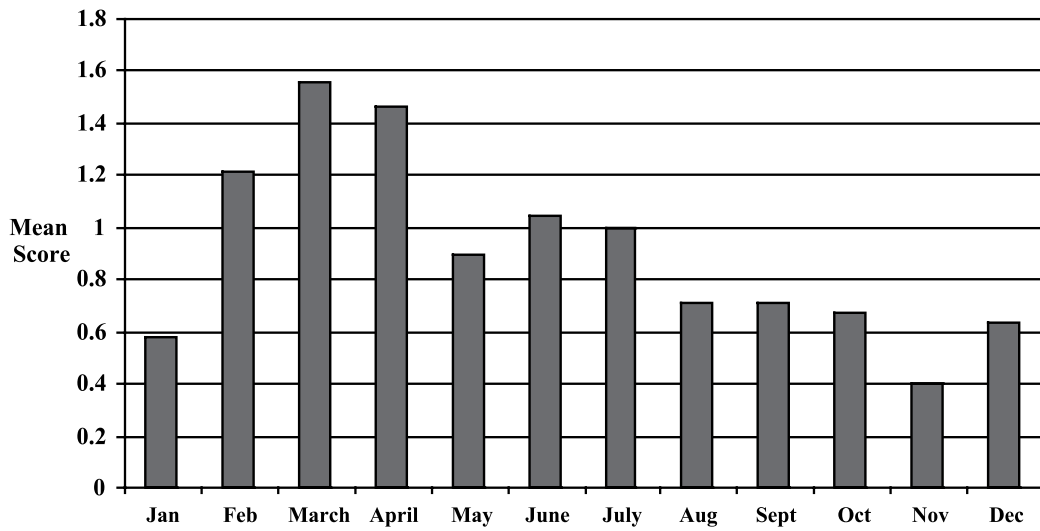
The seasonal variation in customer demand (quantity demanded or sold) for walleye faced by restaurants is quite different from the variation faced by wholesalers (Figure 15). For wholesalers, demand is highest early in the year and tails off as the months progress. For restaurants, however, customer demand takes off in the spring beginning in March and then peaks in the June-July-August summer months. Demand in September returns to springtime levels, and then falls off for a winter slump.

Due to space constraints in the survey instruments, only restaurant managers were asked about the seasonality of walleye supply. Not surprisingly, supplies of walleye are highest (e.g., walleye is most available) during the warmer months of May through September (Figure 16). Supplies are most plentiful during the peak summer months of June, July, and August. Availability begins to fall off in September and even more so in October. Supplies are typically low during the winter months before a substantial upward jump during the late spring (May). About 15 percent of respondents think supplies are relatively stable throughout the year.

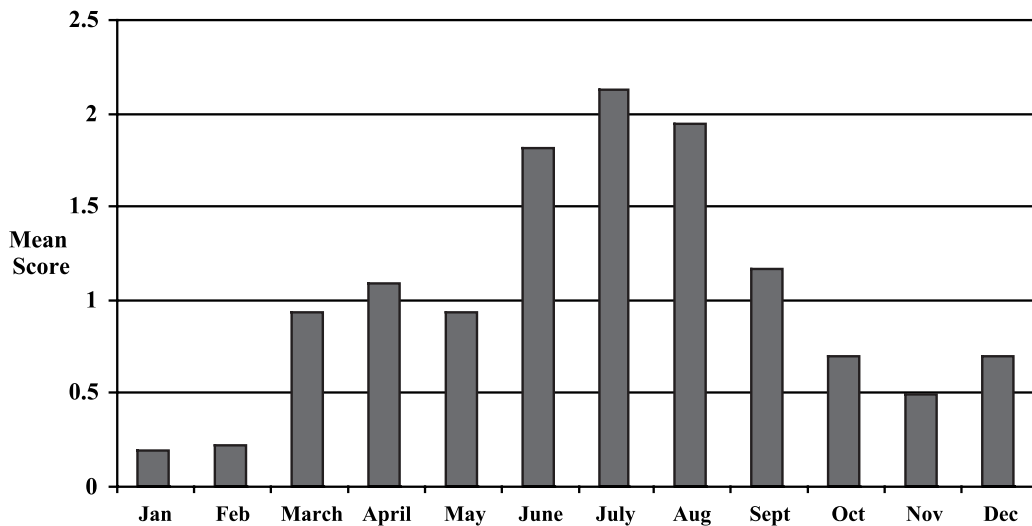
The mean scores for price, supply, and demand for walleye in restaurants are all plotted on the same graph in order to compare the patterns they exhibit throughout the year (Figure 17). The wholesale price restaurants pay for walleye appears to be a lot more stable than customer demand or supply availability. All three factors are at their highest (supply, demand)



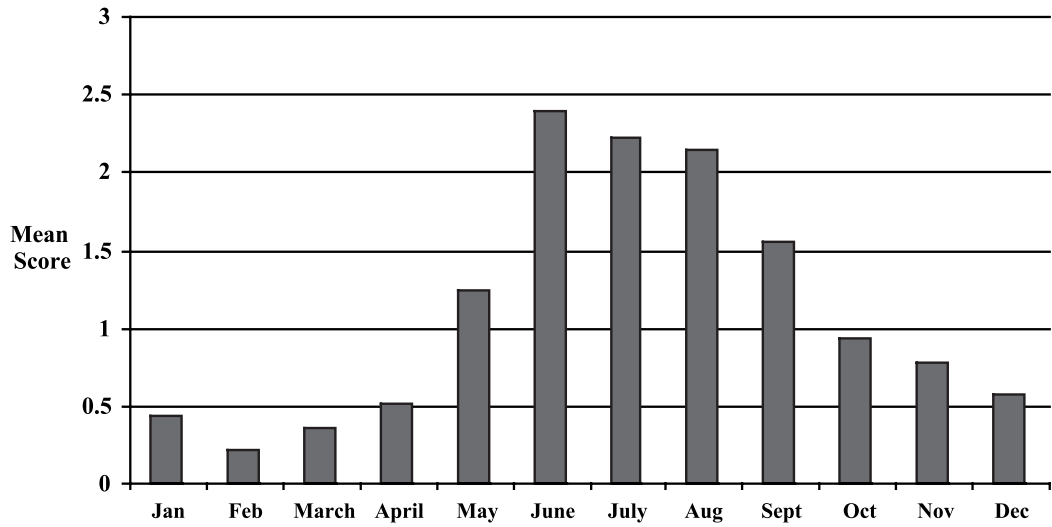
**Figure 13. Seasonality of wholesale price paid for walleye by restaurants: Mean score by month based on restaurateurs' ranking of top four months when price is highest (n=60).**



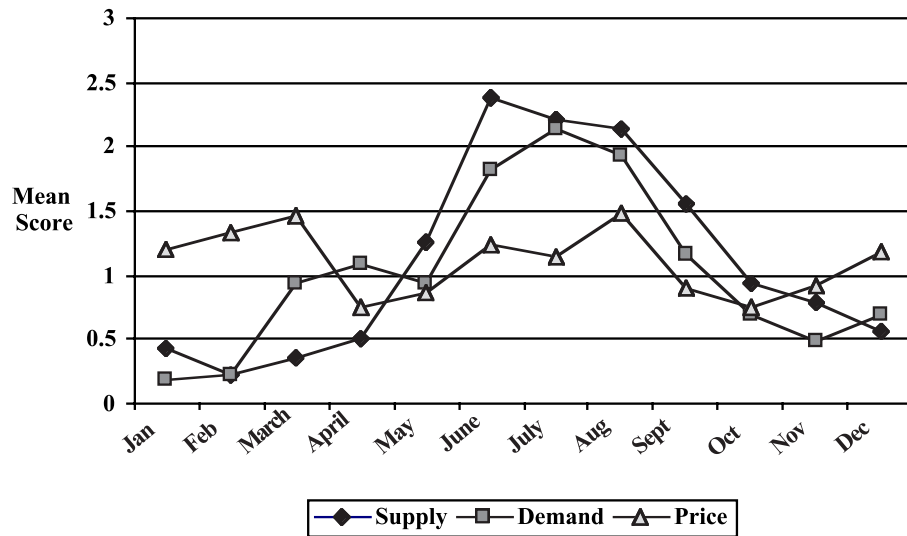
**Figure 14.** Seasonality of demand for walleye in wholesale firms: Mean score by month based on wholesalers' ranking of top four months of highest demand (n=52).



**Figure 15.** Seasonality of demand for walleye in restaurants: Mean score by month based on restaurateurs' ranking of top four months of highest demand (n=69).



**Figure 16. Seasonality of supply of walleye for restaurants: Mean score by month based on restaurateurs' ranking of top four months of highest supply (n=51).**



**Figure 17. Seasonality of demand, supply, and wholesale price of walleye in restaurants in the North Central Region.**

or nearly highest (price) levels during the summer months, followed by declines in all three over the fall months. During the winter months price levels climb, while supplies and demand both remain low.

### Selling Interval

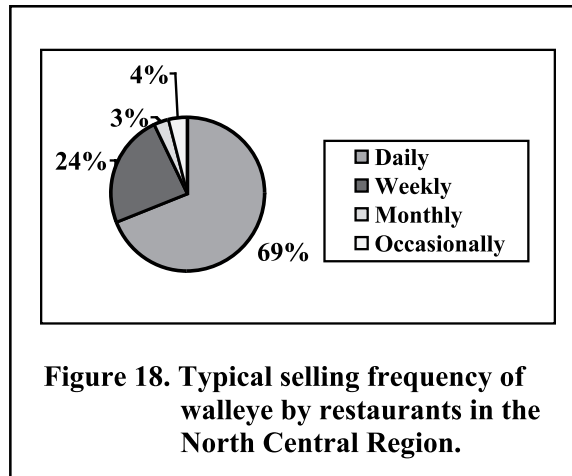
Wholesalers and restaurant managers were asked to indicate the typical selling interval for walleye in their establishment. Three-fourths of all wholesale and restaurant businesses that sell walleye do so on a year-round basis (Table 7). The highest proportion of the remaining firms sell walleye only on an occasional basis. Few firms sell walleye only during a particular “season,” whether that be the Lenten season, the summer season, or the commercial fishing season. Year-round selling by businesses should translate into year-round selling opportunities for aquaculturists. Again, the timing of these sales will be important for maximizing profits.

### Selling Frequency

In addition to indicating their typical selling interval for the year, restaurants were also asked to report how frequently they usually serve walleye during that interval. More than two-thirds (69%) of restaurant managers indicated that they typically sell walleye on a daily basis (Figure 18). Another 24 percent reported selling walleye one to four times weekly. Only 7 percent of the respondents indicated that they sell walleye once a month or less.

### Restaurant Purchases of Walleye Products

Since two-thirds of all seafood dollars are spent in the



foodservice segment of the overall food industry (*Seafood Business*), restaurants are an important seafood market for aquaculturists. The following information on specific aspects of walleye purchases by restaurants is vital to aquaculturists for planning production as well as marketing strategies, and for developing preliminary enterprise budgets. Also, the information tells aquaculturists what they can reasonably expect as they consider the marketing potential for various firm types and as they cultivate marketing relationships with specific restaurants. The aquaculturist who is not prepared to produce and market walleye according to the common product forms, sizes, prices, etc., outlined below should give serious consideration to selling to firm types other than restaurants or be prepared to spend extra time identifying restaurants that will buy what product forms, sizes, prices, etc., the aquaculturist can produce/market.

**Table 7. Typical selling interval of walleye by restaurants and wholesalers in the North Central Region.**

	Restaurants (n=80)	Wholesalers (n=71)
	----- percent -----	
Occasionally	11	20
Lenten Season Only	2	0
Summer Months Only	4	1
Commercial Fishing Season Only	4	3
Year Around	79	76
<b>Total</b>	<b>100%</b>	<b>100%</b>

### Product Form

Restaurants purchase fillets almost to the exclusion of any other product form. Only 6 percent of restaurant managers indicated that they prefer or purchase a walleye product form other than a fillet (Table 8). Frozen fillets are greatly preferred over fresh fillets. When actual purchases are made, frozen fillets are purchased even more frequently. More than three-fourths (78%) of all respondents reported frozen fillets as their most frequently purchased walleye product form by NCR restaurants. Two different types of walleye fillets are commonly sold, skin-on and skinless. The skin-on version is much more popular than the skinless version. Skin-on frozen fillet is the indisputable winner as the most frequently preferred and purchased walleye product form. Either price and/or supply appears to be a problem for restaurants wanting to purchase fresh walleye fillets.

### Size

Walleye is a large enough fish that several fillet sizes are commonly purchased by restaurants. Respondents were asked to indicate the sizes of their two most frequently purchased walleye product forms in 1996. The most common sizes of walleye fillets are:

- 4-6 oz.,
- 6-8 oz.,
- 8-10 oz., and
- 10-12 oz.

Accordingly, survey responses were examined by these various sizes. Over one-half of all frozen fillets and fresh fillets purchased are either 8-10 oz. or 10-12 oz. in size (Table 9). The third most commonly

purchased walleye fillet size differs between fresh and frozen purchases. When frozen fillets are purchased, the smaller size of 4-6 oz. was reported by 20 percent of the respondents. For fresh purchases, the 6-8 oz. fillet size was reported by nearly one-fourth (24%) of respondents.

### Price

Respondents also were asked to indicate the price they paid in July 1996 for their two most frequently purchased walleye product forms. The average price of all walleye fillets is \$5.89 per pound (Table 10). There is not much difference in average price between frozen and fresh walleye fillets (\$5.82/lb. frozen vs. \$6.09/lb. fresh). Price differences are discernible, however, between skinless and skin-on fillets and between different fillet sizes in July 1996. The average price for skin-on frozen fillets is more than 75 cents per pound greater than the average price for skinless frozen fillets. For both fresh and frozen fillets, average prices per pound appear to increase with fillet size.

### Delivery Schedule

Respondents also were asked to report, for their two most frequently purchased walleye product forms, which delivery schedule they commonly use. About two-thirds (65%) of responding restaurants indicated that they prefer weekly, or more frequent, purchases of walleye regardless of whether they are purchasing fresh or frozen fillets (Figure 19). Purchasers of fresh products have a higher proportion of fillets delivered in three to four days than do frozen purchasers. Slightly more than one-fourth of responding restau-

**Table 8. Walleye product forms preferred and purchased by restaurants in the North Central Region.**

Walleye Product Form	Preferred (n=78)	Purchased (n=77)
	----- percent -----	
Frozen fillet, total	67	78
skin-on	46	62
skinless	21	16
Fresh fillets, total	27	16
skin-on	22	13
skinless	5	3
Other	6	6
<b>Total</b>	<b>100%</b>	<b>100%</b>

**Table 9. Walleye fillet sizes most frequently purchased by restaurants in the North Central Region.**

Fillet Size	Frozen Fillets (n=66)	Fresh Fillets (n=21)
	----- percent -----	
4-6 oz.	20	5
6-8 oz.	11	24
8-10 oz.	27	33
10-12 oz.	26	24
Other	16	14
<b>Total</b>	<b>100%</b>	<b>100%</b>

restaurants purchase fillets on a monthly basis, whether the fillets are frozen or fresh.

#### Delivery Quantity

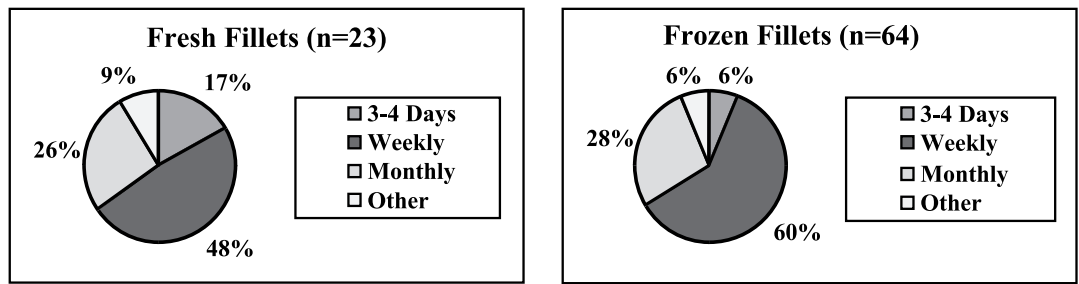
The average delivery quantity for responding restaurants purchasing fresh walleye fillets on a weekly basis is 42 pounds (n=11). The average quantity is somewhat lower for frozen fillets delivered weekly, 29 pounds (n=37). Monthly deliveries of frozen fillets average 34 pounds (n=17). The quantity of frozen fillets delivered monthly is not much larger than the quantity of frozen fillets delivered weekly. Therefore, it appears that restaurants which purchase frozen fillets on a monthly basis do not serve walleye as frequently or in as large a volume as those that obtain their fillets weekly.

#### Suppliers

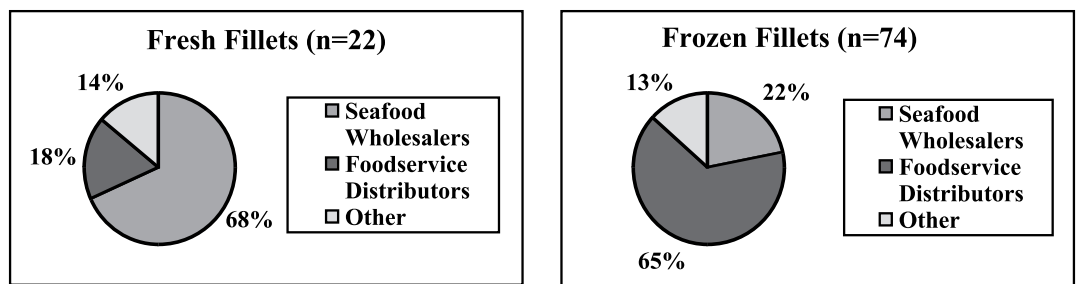
For species-specific data on fish/seafood purchases and sales to be meaningful, they must be connected to specific product forms. Accordingly, respondents were asked to indicate the supplier type from which they buy their most frequently purchased product forms, and not simply where they get “walleye.” As anticipated, the supplier type typically used is different depending upon whether the restaurant is purchasing fresh or frozen fillets (Figure 20). Seafood wholesalers and foodservice distributors supply the vast majority of walleye fillets to restaurants in the NCR. However, seafood wholesalers play a greater role when fresh fillets are purchased, whereas foodservice distributors are used to a greater extent when frozen fillets are purchased. Of the restaurants purchasing fresh walleye fillets, about two-thirds (68%) of them buy their fresh fillets from seafood wholesalers.

**Table 10. Average prices paid for walleye fillets by restaurants in the North Central Region, July 1996.**

Product Form/Size	Number	Average Price Paid
		--- per pound ---
All fillets	80	\$5.89
Frozen fillets, total	60	\$5.82
skinless	16	\$5.25
skin-on	44	\$6.03
4-6 oz.	7	\$6.00
8-10 oz.	10	\$6.20
10-12 oz.	10	\$6.30
Fresh fillets, total	20	\$6.09
skinless	1	\$8.99
skin-on	19	\$5.94
6-8 oz.	3	\$4.67
8-10 oz.	5	\$6.60
10-12 oz.	5	\$6.80



**Figure 19.** Typical delivery schedule for walleye fillets to restaurants in the North Central Region.



**Figure 20.** Supplier type for walleye fillets purchased by restaurants in the North Central Region.

Another one-fifth (18%) purchase fresh fillets from foodservice distributors. The roles of seafood wholesalers and foodservice distributors are reversed, however, when it comes to purchasing frozen walleye fillets. About two-thirds (65%) of the restaurants purchasing frozen walleye fillets buy them from foodservice distributors, while seafood wholesalers supply only one-fifth (22%) of the frozen fillet purchasers.

### Strategies for Coping with Supply and Price Problems

It is well known that virtually all walleye supplies come from Canada and that the price per pound of fillets is rather high. The seasonality data presented earlier in this section (See Figures 12 to 16) show that price, demand, and supply of walleye all follow cyclical patterns during the year. Given the uncertainties of the walleye market, then, what types of coping strategies are commonly used by restaurants?

Similar coping strategies are used regardless of whether supply or price is the problem (Table 11). However, each strategy is used to a different extent depending upon whether the problem is price or supply. The most commonly reported strategies are:

- switching to a different size of the same product form,
- switching suppliers temporarily, and
- dropping walleye from the menu temporarily.

Dropping walleye from the menu is the most commonly reported strategy when price is the problem. When supply is the problem, however, switching to a different size of the same product form or switching suppliers temporarily are strategies used to the same extent. Other strategies are used by less than twenty percent of respondents, except for switching from fresh to frozen when there is a supply problem. One of the least favorite strategies is to switch to a different walleye product form. The results suggest that restaurants are much more willing to change the size of the products they usually purchase rather than to switch to a totally different product form. Since almost all restaurants purchase fillets, it is not likely that aquaculturists could succeed in marketing unprocessed walleye directly to many (if any) restaurants.

### Current Purchases of Farm-Raised Walleye

Farm-raised walleye had only a small presence in NCR restaurants in 1996. Less than 10 percent of



**Table 11. Strategies used by restaurants in the North Central Region for coping with walleye supply or price problems.**

Strategy	Supply Problems (n=76)	Price Problems (n=77)
	----- percent -----	
Switch from fresh to frozen	21	16
Switch to a different size of the same product form	43	32
Switch to a different walleye product form	12	10
Switch suppliers temporarily	42	38
Drop walleye from menu temporarily	28	42
Switch to a different fish species	13	14
Other strategy	7	14

respondents indicated that they purchase farm-raised walleye (Table 12). Less than one-half of responding restaurant managers reported that they do not purchase farm-raised walleye, but are interested in doing so. Confusion often arises among restaurateurs with questions about farm-raised seafood. About one-third of the respondents to this question are not sure whether or not they are purchasing farm-raised walleye. Twenty percent of respondents indicated that they do not purchase farm-raised walleye and are not interested in doing so. Educational efforts may be needed to inform restaurant managers of the advantages of purchasing farm-raised walleye products.

**Increased Purchases with Aquaculture**

It is hoped that walleye aquaculture will alleviate the supply and price problems currently being experienced by retail firms. If this happens, restaurants that are already serving walleye are likely to increase their purchases. In order to estimate how much purchases might increase, respondents were first asked to report how many pounds they purchased during an average week (month) during the summer of 1996. Next they were asked to indicate how many pounds they might purchase per week (month) if aquaculture improved the supply and price of walleye to the point where they could buy all they wanted at prices lower than recent years but still somewhat higher than prices for other species. All responses were converted to weekly data for analysis. The average quantity of walleye purchased per week during the summer of 1996 was 28 lbs., while the

median purchase quantity was 12 lbs. When respondents contemplated the lower price and larger supply scenario that aquaculture might bring, they reported that their walleye purchases might increase to 42 lbs. on average, with a median purchase quantity of 20 lbs. According to these responses, it could be expected that purchases by restaurants already serving walleye could increase by about one-half. This does not take into account new purchases by those restaurants that would start or resume serving walleye if the supply and price situation improved.

**Table 12. Frequency of purchasing farm-raised walleye by restaurants in the North Central Region.**

	Frequency (n=78)
	-- percent --
Frequently	5
Infrequently	4
Not at all, but interested	41
Not at all, and not interested	21
Unsure	29
<b>Total</b>	<b>100%</b>

## Wholesaler Purchases/Sales of Walleye Products

As is the situation for market information on restaurant purchases of walleye, the following information on specific aspects of walleye purchases by wholesalers is vital to aquaculturists. This information can be used for planning production or marketing strategies, and for developing preliminary enterprise budgets. Also, the information tells aquaculturists what they can reasonably expect as they consider the marketing potential for various firm types and as they cultivate marketing relationships with specific firms. Aquaculturists who are not prepared to produce and market walleye according to the common product forms, sizes, prices, etc., outlined below should re-evaluate whether they are truly ready to produce and market farm-raised walleye to commercial markets.

### Product Form of Purchases

Wholesalers were asked to list their top five walleye product forms purchased, in terms of volume of purchases. Frozen fillet appears to be the product form

of choice among wholesale firms (Table 13), especially the skin-on version. Close to one-half of wholesale firms (43%) reported frozen fillet as their most frequently purchased product form (either skin-on or skinless). More than three-fourths of the firms (81%) mentioned this product form as one of their top five. Other commonly purchased walleye product forms include fresh fillet and fresh whole/round. Skin-on fillets are greatly preferred over skinless fillets regardless of whether the fillets are fresh or frozen.

Purchases of various walleye product forms do vary based upon firm type. Seafood wholesalers' most frequently purchased walleye product form is fresh whole/round, followed by fresh fillet and frozen fillet. However, when all mentions of product forms are included (respondents were allowed to list five), about two-thirds of all seafood wholesalers handling walleye purchase frozen fillet, fresh fillet, and fresh whole/round. Most of the fillets purchased are skin-on rather than skinless. A significant proportion of seafood wholesalers also purchase fresh dressed

**Table 13. Walleye product forms purchased by wholesale firms in the North Central Region, by firm type.**

Firm Type	Fresh whole/round	Fresh dressed	Fresh fillet, skinless	Fresh fillet, skin-on	Frozen whole/round	Frozen dressed	Frozen fillet, skinless	Frozen fillet, skin-on	Other	Total
	----- percent -----									
All Wholesalers (n=69)										
Top mention <sup>a</sup>	26	3	6	20	0	1	10	33	0	100
Any mention <sup>a</sup>	38	17	14	39	7	3	16	65	3	
Seafood Wholesaler (n=25)										
Top mention	44	0	8	28	0	0	4	16	0	100
Any mention	64	36	12	56	8	0	8	68	4	
Seafood Retailers (n=28)										
Top mention	25	7	4	25	0	0	4	36	0	100
Any mention	36	11	14	43	11	4	4	57	0	
Food Service Distributors (n=15)										
Top mention	0	0	7	0	0	7	33	53	0	100
Any mention	0	0	20	7	0	7	47	73	7	

<sup>a</sup>Wholesalers were asked to list their top five walleye product forms in terms of volume of purchases. The percentages for "Top mention" sum to 100% since each firm could only list one product form as the most frequently purchased. The percentages for "Any mention" sum to greater than 100% since each firm could list up to five product forms.

walleye.

Seafood retailers' most frequently purchased walleye product form is frozen fillet (40%), followed by fresh fillet and fresh whole/round. Fresh and frozen fillets are much more extensively purchased than fresh whole/round by seafood retailers when all product form mentions are included. Seafood retailers make much less use of fresh whole/round and fresh dressed products than seafood wholesalers.

Foodservice distributors almost exclusively purchase frozen fillet (86%), but do handle some fresh fillet. The proportion of foodservice distributors purchasing skinless fillets is much higher than the proportion of seafood wholesalers and retailers.

The average number of different walleye product forms purchased is just over two. (Skinless and skin-on frozen fillets are counted as two different product forms). Seafood wholesalers tend to purchase the most product forms. Three-fourths of these firms reported purchasing at least two different walleye products, while the proportion for seafood retailers is much less. The average number of walleye product forms purchased is 2.6 for seafood wholesalers, 1.8 for seafood retailers, and 1.6 for foodservice distributors. None of the responding foodservice distributors purchase more than two walleye product forms.

### Size

Wholesalers were asked to report, for their two most frequently purchased walleye product forms, the sizes of their product purchases in July 1996. For purchases of fresh whole/round walleye, the most commonly purchased size is two pounds (Table 14). The second most commonly purchased size is 1 1/2 pounds. Some larger fish are also purchased. In general, larger sizes of fresh fillets are preferred as compared to frozen fillets. The average size of all fresh fillets purchased are 9.0 oz., while the average size of frozen fillets is 7.5 oz. A considerable percentage (42%) of the fresh fillets purchased are larger than 8-10 oz., while the proportion of frozen fillets larger than 8-10 oz. is quite small (12%). With frozen fillets, 8-10 oz. and 6-8 oz. sizes are overwhelmingly preferred. Together, these two sizes account for 80 percent of frozen fillet purchases. The range of sizes commonly purchased is broader for fresh fillets. Only 8-10 oz. fillets command a substantial proportion of fresh fillet purchases.

### Price

Frozen walleye fillets are, on average, commanding higher prices from wholesalers than fresh walleye fillets. In July 1996, wholesalers reported paying an

**Table 14. Sizes of walleye product forms purchased by wholesalers in the North Central Region.**

<b>Product Form/Size</b>	<b>Proportion of Firms ----- percent -----</b>	<b>Number of Firms</b>	<b>Average Size ----- oz. -----</b>
Fresh whole/round	(100%)	16	36.5
1 1/2 lbs.	19		
2 lbs.	62		
3 lbs. or larger	19		
Fresh fillets	(100%)	24	9.0
under 6 oz.	12		
6-8 oz.	17		
8-10 oz.	29		
10-12 oz.	17		
12-14 oz.	8		
16 oz.	17		
Frozen fillets	(100%)	43	7.5
under 6 oz.	9		
6- 8 oz.	33		
8-10 oz.	46		
10-12 oz.	7		
Larger than 12 oz.	5		

average of \$5.27 per pound for fresh fillets and \$5.54 per pound for frozen (Table 15). Prices vary depending upon fillet size. The more commonly purchased fillet sizes tend to be somewhat higher in price than fillets smaller or larger than the commonly purchased sizes. The average price paid by wholesalers for walleye fillets (\$5.44/lb.) is 45 cents lower than the average price that restaurants reported paying for walleye fillets. Purchases of fresh whole/round walleye by wholesalers average \$2.21 per pound.

### Delivery Schedule and Quantity

Wholesale respondents were also asked to report, for their two most frequently purchased walleye product forms, which delivery schedule they commonly use. Responses varied by product form. All of the wholesalers purchasing fresh whole/round walleye products on a regular basis prefer to have them delivered on a weekly or more frequent basis (Figure 21). Weekly or more frequent deliveries are also highly preferred for purchases of fresh walleye fillets. Over two-thirds of responding wholesalers (71%) reported receiving deliveries of fresh walleye fillets on this schedule. When fresh fillet is not the primary product purchased, then monthly deliveries are also acceptable. Among responding wholesalers, monthly delivery is the preferred schedule for purchasing frozen walleye fillets. Almost one-half of the respondents (49%) chose this option. Another one-third (31%) reported deliveries of frozen fillets on a weekly or more frequent basis. Twenty percent of the responding wholesalers reported purchasing frozen walleye fillets a few times each year, but not on a monthly basis. In contrast, two-thirds of restaurants prefer frozen fillet deliveries on a weekly or more frequent basis, and only 26 percent prefer monthly deliveries.

Quantities delivered were analyzed by walleye product form with attention paid to firm type. There is such a wide range of quantities reported for each product form that calculating an average would be meaningless. There is a much smaller range of reported quantities among restaurants.

### Suppliers

Wholesalers were asked to indicate the supplier type from which they buy their most frequently purchased walleye product forms, and not simply where they get "walleye." Responses vary by product form and firm type. Fresh whole/round walleye are purchased primarily from commercial fishermen, processors, and seafood wholesalers. (Processors are actually specialized seafood wholesalers.) Seafood wholesalers obtain their fresh whole/round walleye products from all three of these sources. Seafood retailers, however, rarely utilize fishermen and buy most walleye of this product form from seafood wholesalers. Fresh walleye fillets are obtained almost exclusively from seafood wholesalers and processors, regardless of the firm type purchasing them. Frozen walleye fillets are purchased from a variety of sources including foodservice distributors and brokers in addition to the usual seafood wholesalers and processors. Seafood wholesalers purchase all of their frozen fillets from other seafood wholesalers and processors. Seafood retailers utilize foodservice distributors along with seafood wholesalers and brokers. Foodservice distributors obtain their frozen fillets from a variety of sources including seafood wholesalers, processors, and brokers.

### Current Purchases of Farm-Raised Walleye

Less than 10 percent of responding wholesalers are currently purchasing farm-raised walleye, either

**Table 15. Average prices paid for most frequently purchased walleye products by wholesalers in the North Central Region, July 1996.**

Product Form/Size	Number	Average Price Paid ----- per pound -----
Fresh whole/round	17	\$2.21
Fresh fillets	23	\$5.27
8-10 oz.	7	\$5.83
Frozen fillets	39	\$5.54
6-8 oz.	12	\$5.68
8-10 oz.	15	\$5.71
Other sizes	6	\$5.03

frequently or infrequently (Table 16). However, almost three-fourths of the wholesalers (73%) expressed interest in purchasing farm-raised walleye. Only a small percentage (8%) indicated they are not interested in purchasing farm-raised walleye. Few are unsure whether the walleye they are purchasing is farm-raised or not.

### Increased Purchases with Aquaculture

Wholesalers are optimistic about increasing walleye purchases if aquaculture increases supplies enough to fully supply the market and reduces prices to levels lower than in recent years, but still somewhat higher than price levels for other species. In order to estimate how much purchases might increase, respondents were first asked to report how many pounds of walleye they purchased during an average week (month) during the summer of 1996. Next they were

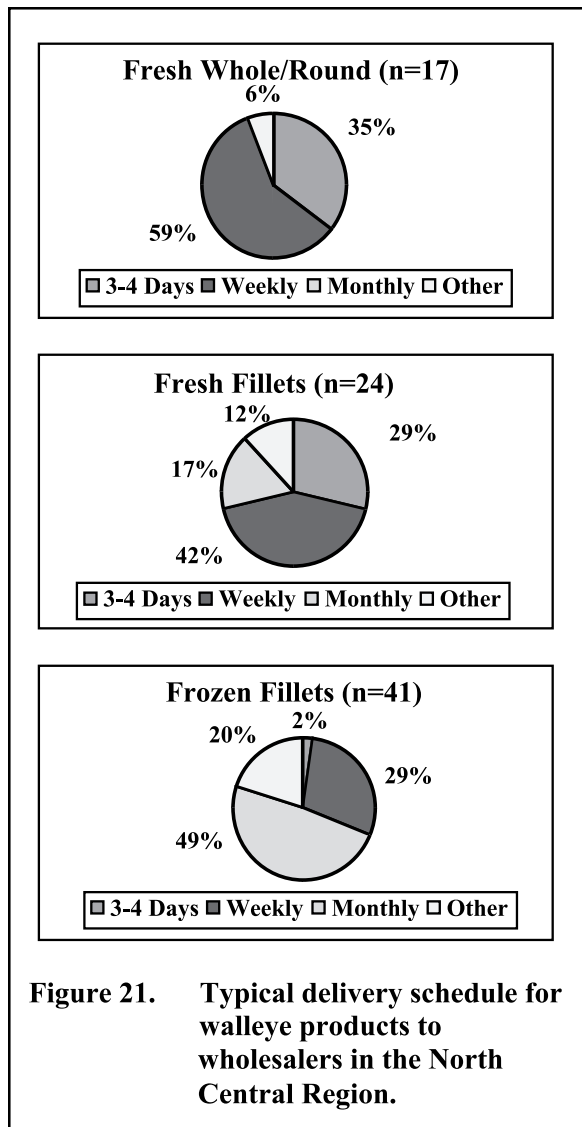
asked to indicate how many pounds of walleye they might purchase per week (month) if aquaculture improved the supply and price of walleye. More than three-fourths of the responding wholesalers expect their walleye purchases to increase with walleye aquaculture. About one-third reported that their purchases are likely to double. On average, wholesalers expect to buy slightly more than 50 percent more walleye than they purchased in July 1996.

### Best Selling Product Forms

Since it was hypothesized that wholesale firms might do some processing of the walleye they purchase, these firms were asked to indicate their best selling product forms as well as the product forms they typically purchase. By far the best selling walleye product of wholesaler firms is frozen, skin-on fillets (Table 17). Seafood wholesalers frequently purchase walleye in the fresh whole/round form, but then sell primarily fillets, both fresh and frozen. These data suggest some processing is done by seafood wholesalers. Seafood retailers, on the other hand, appear to both purchase and sell fresh whole, fresh fillets, and frozen fillets in similar proportions. This suggests they do very little processing themselves. Foodservice distributors likewise do little processing. They typically buy and sell frozen fillets.

### Customers

Wholesale firms primarily sell walleye to restaurants, final consumers, and supermarkets (Table 18). Seafood wholesalers sell to a wider variety of customers, while seafood retailers typically serve only restaurants and final consumers. Foodservice



**Table 16. Frequency of purchasing farm-raised walleye by wholesalers in the North Central Region.**

	Frequency (n=64)
	-- percent --
Frequently	5
Infrequently	3
Not at all, but interested	73
Not at all, and not interested	8
Unsure	11
<b>Total</b>	<b>100%</b>

distributors sell walleye to supermarkets and non-restaurant foodservice operations as well as to their primary market of restaurants. The vast majority of the responding seafood wholesalers (85%) reported selling walleye to restaurants, while just one-half reported selling it to supermarkets. This suggests that restaurants may be a bigger market for walleye than are supermarkets. Almost one-third of seafood wholesalers sell walleye to final consumers, revealing the pervasive role of retailing among firms that are primarily wholesalers. A significant proportion of seafood retailers (27%) sell to restaurants as well as to final consumers.

The data was further analyzed to determine which product forms are typically sold to which customer types. Restaurants primarily purchase walleye fillets, and buy more frozen than fresh products (Figure 22). Consumers and supermarkets, in contrast, purchase greater proportions of fresh than frozen products, although they buy just as many fillets.

## Summary and Conclusions

Walleye is a popular sport and eating fish in the

North Central Region. Virtually all U.S. walleye fisheries are off-limits to commercial fishermen in favor of sport fishermen. The commercial demand for walleye is supplied primarily by the Canadian market which has experienced some declines in its walleye fisheries. Because of walleye's popularity, high market value, and supply limitations, interest in the commercial culture of walleye has intensified in recent years. Considerable funds have been invested in developing commercial culture practices. This study examines marketing issues affecting walleye aquaculture.

In this study, a mail survey was conducted of retail and wholesale firms in the food industry, i.e., restaurants, supermarkets, seafood wholesalers, seafood retailers, foodservice distributors, grocery wholesalers, and fish brokers. Different survey instruments were developed for different firm types. Survey questions requested general information on firm characteristics and fish/seafood purchase/sales behavior along with specific information on purchases/sales of walleye. A mailing list was purchased from a private company. Survey mailings occurred between August 1996 and March 1997.

**Table 17. Walleye product forms sold by wholesale firms in the North Central Region, by firm type.**

Firm Type	Fresh whole/round	Fresh Fresh dressed	Fresh fillet, skinless	Fresh fillet, skin-on	Frozen whole/round	Frozen Frozen dressed	Frozen fillet, skinless	Frozen fillet, skin-on	Other	Total
	----- percent -----									
All Wholesalers (n=59)										
Top mention <sup>a</sup>	14	5	14	27	0	2	5	34	0	100
Any mention <sup>a</sup>	25	15	32	47	5	7	17	78	2	
Seafood Wholesaler (n=23)										
Top mention	13	9	17	39	0	0	0	22	0	100
Any mention	35	30	43	70	4	9	9	87	4	
Seafood Retailers (n=24)										
Top mention	21	4	13	29	0	0	0	33	0	100
Any mention	29	8	25	46	8	4	0	50	0	
Food Service Distributors (n=11)										
Top mention	0	0	9	0	0	9	27	55	0	100
Any mention	0	0	27	9	0	9	64	100	0	

<sup>a</sup>Wholesalers were asked to list their top five walleye product forms in terms of volume of purchases. The percentages for "Top mention" sum to 100% since each firm could only list one product form as the most frequently purchased. The percentages for "Any mention" sum to greater than 100% since each firm could list up to five product forms.

Restaurants were a major focus of the survey because this firm type had not previously been surveyed regionwide for fish/seafood purchases/sales behavior. For the purposes of this project, only tableservice restaurants were included. Also excluded were establishments primarily selling pizza or those that were part of a chain. Over forty percent of responding restaurants indicated that they served walleye in 1996. Survey data were analyzed to determine which firm characteristics influence whether or not a restaurant serves walleye. Location appears to be a strong factor in serving walleye. Walleye-serving restaurants appear to be concentrated in Minnesota, followed by the other northern tier states of Wisconsin, South Dakota, North Dakota, and Michigan. Walleye consumption in restaurants also seems to be more popular around the Great Lakes. While walleye consumption in restaurants tends to concentrate in certain states or areas, the data show that consumption is still reasonably widespread across the NCR. The population density (urban, rural, etc.) associated with a restaurant's location does not seem to affect whether or not the restaurant serves walleye. Other firm characteristics that appear to positively influence a firm's decision to serve walleye are; a more formal ambiance/more expensive menu, larger firm size, and greater presence of seafood on the

menu. Aquaculturists could focus their marketing efforts on restaurants which have one or more of the characteristics which are positively associated with serving walleye.

Supermarkets, which are defined by the grocery trade as stores with \$2 million or more in annual sales, were the other retail-level firm type surveyed. Unfortunately, it was very difficult to isolate the "supermarkets" from the larger set of "all grocery stores." Therefore, the rate of useable responses is quite low, and thus the results must be interpreted with caution. Over 70% of responding supermarkets in the NCR sold walleye in 1996. This percentage is substantially above the forty-plus percent of restaurants that sold walleye. In contrast to restaurants, location does not appear to affect a supermarket's decision to sell walleye. Firm characteristics that do appear to be positively associated with supermarkets selling walleye include status as a "chain" (versus "independent") store, larger size (both in terms of physical footage and gross sales), the use of a full-service seafood counter, and more space allocated to the seafood department. Supermarkets having one or more of these characteristics would have greater potential as customers of farm-raised walleye.

Wholesalers represent a much more diverse grouping of firms. However, because of the whole-

**Table 18. Percent of wholesale firms in the North Central Region that sell walleye to various customer types, by firm type.**

Customer Firm Type	----- Wholesale Firm Type -----		
	Seafood Wholesalers (n=20)	Seafood Retailers (n=22)	Foodservice Distributors (n=12)
	----- percent -----		
Restaurants	85	27	100
Other Foodservice	0	0	25
Final Consumers	30	100	0
Supermarkets	50	5	25
Seafood Wholesalers	10	0	0
Foodservice Distributors	15	5	0
Seafood Retailers	15	0	0
Other	20	0	0

sale rather than retail orientation of most firms, fewer firm characteristic questions are necessary or useful. Virtually all of the seafood wholesalers and retailers sell fresh or frozen fish/seafood, while less than one-half of responding foodservice distributors and grocery wholesalers do so. While only five percent of grocery wholesalers reported selling walleye in 1996, the percentages are much higher for the other wholesale firm types. Two-thirds of seafood retailers sold walleye in 1996, while about one-half of seafood wholesalers and about forty percent of foodservice distributors did so. Data for seafood wholesalers and retailers were analyzed to determine what is different between Sellers and Non-Sellers of walleye. Minnesota has the highest proportion of wholesale firms selling walleye, followed by Michigan and Ohio. Firms that sold walleye in 1996 tend to be larger in

size (based on gross sales). Aquaculturists' marketing efforts with farm-raised walleye could be targeted to wholesalers in the states noted above and perhaps the larger wholesalers in the remaining Lake States.

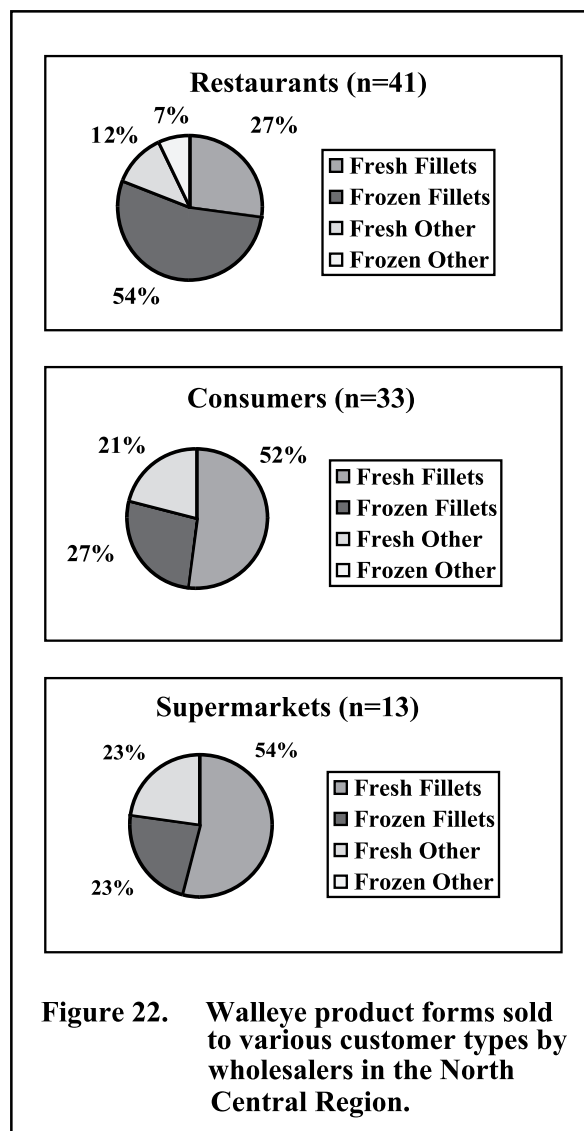
Respondents of all firm types that did not sell walleye in 1996 were asked to report why not. Only restaurants had a substantial number of firms responding to these questions. About one-half of the firms indicated that they had experienced no or low demand for walleye. Another one-third reported that they did not purchase any walleye because it is too expensive or not available. Evidently, price and supply are both problems in the market for walleye.

Restaurants and wholesale firms that reported selling walleye in 1996 were asked to provide details on their walleye purchases and sales. These data reveal to aquaculturists what they can reasonably expect to encounter in the marketplace. Thus, these data are useful for planning production and marketing strategies and developing preliminary budgets. Serious consideration must be given to whether the aquaculturist will be able to produce and market walleye products consistent with market expectations, and make a profit.

The seasonality of the demand, price, and supply of walleye was examined. There are definite cyclical patterns for both restaurants and wholesalers. The patterns are more erratic for wholesale firms. Most firms that purchase walleye do so year around. Seasonal fluctuations need to be investigated and taken into account by aquaculturists in order to most profitably time their production and sales.

Restaurants prefer to purchase frozen walleye fillets over fresh walleye fillets by about a 2-to-1 margin, and end up actually purchasing more than three-fourths of their walleye products as frozen fillets. Skin-on fillets are preferred over skinless fillets. The most commonly purchased fillet size is 8-10 oz. for both fresh and frozen fillets. Fillets purchased in July 1996 averaged \$5.89/lb. Preferred sizes and the skin-on forms appear to cost somewhat more than less preferred fillet sizes and forms. Weekly deliveries (or more frequent) are preferred for both fresh and frozen fillets. About one-fourth of restaurants purchasing either fresh or frozen fillets commonly prefer monthly deliveries. Restaurants purchasing fresh fillets on a weekly basis purchase 42 pounds per week on average. For frozen fillets, weekly purchases average 29 pounds and monthly purchases average 34 pounds.

Restaurants in the NCR primarily purchase their walleye products from seafood wholesalers and foodservice distributors. Seafood wholesalers play a larger role in providing fresh fillets, while foodservice distributors supply more of the frozen fillets. Less





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than 10 percent of the restaurants indicated they are purchasing farm-raised walleye, but 41 percent reported interest in doing so. If aquaculture substantially increased the availability of walleye and brought the price closer to other species, restaurants already selling walleye indicated that, on average, their walleye purchases could increase by about one-half. In order to cope with the current price and supply problems, restaurants tend to respond by switching to a different size of the same product form, switching suppliers, or dropping walleye from the menu temporarily. Responses suggest that restaurants are not willing to buy unprocessed walleye even when price/supply is limiting.

Combining together all wholesaler purchases of all walleye product forms, frozen, skin-on fillet is by far the most widely purchased walleye product form. Fresh fillet and fresh whole/round walleye are tied for second place. Seafood wholesalers tend to purchase multiple walleye products, while two products is about the limit for seafood retailers and foodservice distributors. The top walleye product forms purchased also vary by firm type. Foodservice distributors almost exclusively purchase frozen fillets, but do purchase some fresh fillets secondarily. Seafood retailers' walleye fillet purchases are about evenly split between fresh and frozen, while fresh whole/round walleye are purchased to a lesser extent. Seafood wholesalers' top purchased walleye product is fresh whole/round, followed by fresh fillet and frozen fillet.

Different sizes of various walleye product forms are more desirable to wholesalers than others. When purchasing fresh whole/round walleye, two-pound walleye are greatly preferred over smaller or larger fish. For frozen fillets, two sizes are most commonly purchased, 8-10 oz. and 6-8 oz. A variety of fresh fillet sizes are commonly purchased, with 8-10 oz. leading the pack. Average prices paid by wholesalers for walleye fillets in July 1996 tend to be only slightly lower than the prices paid by restaurants. The average price paid by wholesalers for fresh fillets is \$5.27/lb., but for the preferred 8-10 oz. fillets the price is almost as high as the average price paid by restaurants of \$5.89/lb. The average price wholesalers paid for frozen fillets is \$5.54/lb, with the preferred sizes commanding 10-20 cents more per pound. Wholesalers, on average, paid \$2.21/lb. for fresh whole/round walleye. Frequency of walleye product delivery varies among wholesalers depending upon product form purchased. When fresh products of any form are purchased, weekly or more frequent deliveries are preferred by all wholesale firm types. When frozen fillets are purchased, about one-half of wholesalers

actually prefer monthly deliveries, with only one-third preferring weekly deliveries.

Suppliers of walleye product forms to wholesalers vary depending upon the walleye product form involved and the firm type doing the purchasing. Fresh whole/round walleye come from seafood wholesalers when seafood retailers are the purchasers. When seafood wholesalers are doing the purchasing, however, the fresh whole/round walleye come from commercial fishermen, processors, and other seafood wholesalers. All firm types purchase fresh walleye fillets from seafood wholesalers and processors. Frozen walleye fillets are purchased from a variety of sources, especially by seafood retailers and foodservice distributors.

While less than 10% of wholesalers reported purchasing farm-raised walleye, almost three-fourths expressed interest in doing so. Wholesalers are about as optimistic as restaurants about increasing their walleye purchases if aquaculture improves the walleye supply/price situation. On average, wholesalers expect that their purchases could increase about 50% with aquaculture.

Since wholesalers also sell walleye products as well as purchase them, data also were obtained on product forms sold and customer types. The single, most frequently sold walleye product form among all wholesalers is frozen, skin-on fillet. Both skinless and skin-on varieties of fresh fillet are also best sellers. Fresh whole/round walleye are also sold, but to a more limited extent. Various fresh walleye products are widely sold by both seafood wholesalers and seafood retailers in addition to the top selling frozen fillet. Some foodservice distributors sell fresh fillet, but predominately sell both skinless and skin-on frozen fillet.

All wholesale firm types, but especially foodservice distributors and seafood wholesalers, sell walleye products to restaurants. Other major customers of seafood wholesalers include supermarkets and final consumers. Several other firm types are minor walleye customers of seafood wholesalers. Seafood retailers have fewer customer types for walleye products. All responding seafood retailers indicated that they sell to final consumers, while about one-fourth reported restaurants as a customer type. Foodservice distributors reported selling walleye to supermarkets and non-restaurant foodservice establishments as well as to restaurants. When looking at the data from the customer point of view, consumers and supermarkets tend to buy considerably more fresh walleye products (both fillet and other), while restaurants tend to purchase more frozen walleye products (fillet and other).

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## Implications

The marketing data gathered and analyzed in this project have important implications for walleye aquaculture. One important finding is the acceptability of frozen walleye fillets in the marketplace. Once the burden of supplying fresh products on a weekly basis is lifted, the number of production and marketing options broadens considerably. Production facilities can be located wherever conditions are most conducive to cost-effective production rather than located in close proximity to markets. Rather than having to time production to obtain market-size fish on specific dates, the culture process can begin at any time during the year that works best for the type of production facility and for the pricing and availability of fingerlings. Because it will not be essential to market only to nearby firms, potential markets can be investigated in more far flung areas where customers might be found that would make a better fit with the aquaculture business. Investment in high-tech freezing processes should be investigated since product quality is so highly desirable in the marketplace.

There is a market for walleye in the round or dressed, but only if the fish are fresh and not frozen.

These fresh products are expected to be delivered on a weekly or more frequent basis. Aquaculturists unprepared to cope with processing at all or just not with filleting should be able to find markets for unprocessed or less processed walleye. However, delivery requirements may be problematic. Alternatively, aquaculturists could set up their own processing and/or marketing cooperative to handle fillet processing, freezing, storage, and distribution.

Survey results show that product size matters in addition to the walleye product form. However, there appears to be some flexibility on size, more so for some product forms than others. Aquaculturists will need to familiarize themselves with the desired product size(s) by firms they plan to supply. Alternatively, a bit of shopping around may enable the aquaculturist to find firms that will readily accept the purchasing farm-raised walleye. All of these factors suggest that there is a promising market for farm-raised walleye. The major problem will be to discover how to profitably culture walleye on a commercial scale.

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## Appendix

Supermarket Business. various issues, 1992-1995.

On the following pages are copies of the actual survey instruments developed and used in this project. The exception to “used” is the “Yellow Perch and Walleye” survey for supermarkets. This Phase II survey was used initially. However, when supermarket response was so low that a second full mailing of the Phase I supermarket survey had to be conducted, the use of this follow-up survey to obtain data specific to yellow perch and walleye purchases/sales was discontinued. For purposes of completeness this survey instrument is included in the Appendix.

The survey instruments were printed onto 8 1/2 inch by 11 inch paper. When stapled and folded, this yielded a survey booklet with the dimensions of 5 1/2

inches by 8 1/2 inches. Heavier stock was used for the cover of each booklet to minimize damage in mailing. The booklets were designed to be originally mailed out in 6 inch by 9 inch envelopes and to be self-mailers for the respondent. Business reply information was printed on the back cover of the booklet and a sticker attached to the front cover so that the respondent could seal the booklet before mailing at the surveying institution’s expense. A different color cover was used for each of the five survey instruments developed in order to minimize confusion. Some of the supermarket and restaurant respondents would be receiving both Phase I and Phase II surveys, so they needed to be able to distinguish between them on sight. Confusion for data entry personnel was also minimized by color coding of the surveys.

# Appendix A: Restaurant Survey



Purdue University

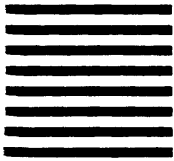
## *Restaurant Survey*

Fish/Seafood Purchases and Sales in the  
North Central Region

Sponsors:

North Central Regional Aquaculture Center  
National Sea Grant College Program  
Illinois-Indiana Sea Grant

*Please use sticker below to  
seal questionnaire before mailing*



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**  
FIRST CLASS PERMIT NO. 13 LAFAYETTE, INDIANA

POSTAGE WILL BE PAID BY ADDRESSEE

590 1145 2410

### About the Survey ...

Aquaculture is generating increasing interest in the U.S. In the North Central Region, both the production and marketing aspects of aquaculture are focusing in on two species having strong Regional but not National appeal: yellow perch and walleye.

Market information is vital for farmers and other entrepreneurs to successfully plan and establish aquaculture enterprises. However, most Regional aquaculture funding to date has focused on culture techniques. The purpose of this survey is to make restaurant market information for the North Central Region on fish/seafood in general and on yellow perch and walleye in particular available to all interested persons. Survey data will be used by government officials, bankers, venture capitalists, current and potential aquaculturists, university researchers and extension personnel to make sound judgments regarding aquaculture investments and activities.

Restaurants are a vital segment in the fish/seafood marketing channels of the Region. Your restaurant was randomly selected from the 65,000+ non-chain restaurants in the North Central Region. Because of the great diversity of restaurants spawned by the consumer-driven marketplace, your response is extremely important as representative of restaurants in your state with similar operational characteristics. **Your response will be completely confidential.** If your menu includes yellow perch or walleye, a follow-up survey will be mailed to you so that specific market information on these two species can be discovered. This data will be critical for building a successful aquaculture industry that can supply your restaurant year-round with quality lake fish.

**Thank you** for providing invaluable help by completing this survey. If you have any questions about the survey, have any additional comments to share, or are interested in receiving a copy of the survey results, please feel free to contact: Dr. Marshall A. Martin, Department of Agricultural Economics, Purdue University, 1145 Krannert Building, West Lafayette, Indiana, 47907-1145; telephone (317) 494-4268.

### Operational Characteristics

1. Is your establishment a tableservice restaurant?
  - Yes -- my tableservice restaurant has either a full or limited menu
  - No -- my restaurant is either fast food or other
  
2. How close is your restaurant located to one of the Great Lakes?
  - 0 to 50 miles
  - 51 to 100 miles
  - More than 100 miles
  
3. Is the setting of your restaurant...? (**Check only one**)
  - Urban** (Chicago, Cincinnati, Cleveland, Columbus, Detroit, Indianapolis, Kansas City KS/MO, Milwaukee, Minneapolis/St. Paul, or St. Louis/East St. Louis)
  - Suburban** (suburb of an urban city listed above)
  - Major metro** (city and surrounding areas with population 250,000 to less than one million)
  - Minor metro** (city and surrounding areas with population 100,000 to 249,999)
  - Small town/rural** (population centers less than 100,000)
  
4. What is the primary menu theme of your restaurant? (**Check only one**)
  - American
  - Steak
  - Seafood
  - Steak/seafood combination
  - Pizza
  - Ethnic
  - Other \_\_\_\_\_

6. What is the average check per person at an evening meal in your restaurant? (Check only one)

- Less than \$8
- \$8 to \$14.99
- \$15 to \$24.99
- \$25 or more

7. Which category best describes the annual gross sales of your restaurant for the last fiscal year? (Check only one)

- \$250,000 or less
- \$250,001 to \$500,000
- \$500,001 to \$1 million
- Over \$1 million

### Fish/Seafood Purchases & Sales

7. Does your menu include fish or seafood as an entree?

- Yes (please continue survey with Question #8)
- No, but I plan to add a fish/seafood entree within a year
- No

If you answered NO, you may stop at this point and return the survey. Thank you.

8. About what percent of your restaurant's total food sales are from fish/seafood?

\_\_\_\_\_ (percent)

9. What are your five best selling fish/seafood species? Please write in the code numbers from the coded list on the adjacent page.

(Only one code number per line)

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_
- (4) \_\_\_\_\_
- (5) \_\_\_\_\_

\*\*\*\*\*

### Code Numbers for Fish/Seafood Species

- 1. Abalone
- 2. Bass, hybrid striped
- 3. Bass, lake
- 4. Bass, other
- 5. Bluefish
- 6. Buffalo fish, lake
- 7. Carp, lake
- 8. Catfish, ocean
- 9. Channel catfish, farm-raised
- 10. Channel catfish, lake
- 11. Calamari
- 12. Clams
- 13. Cod
- 14. Crab
- 15. Crawfish/crayfish
- 16. Croaker
- 17. Cuttlefish
- 18. Drum, freshwater (lake)
- 19. Eel, lake
- 20. Eel, ocean
- 21. Flounder/Sole (flatfish)
- 22. Grouper
- 23. Haddock
- 24. Hake/Whiting
- 25. Halibut
- 26. Herring, lake
- 27. Herring, other
- 28. Hoki
- 29. KingKlip
- 30. Lobster
- 31. Mackerel
- 32. Mahi Mahi
- 33. Monkfish
- 34. Mullet
- 35. Orange Roughy
- 36. Oysters
- 37. Perch, ocean
- 38. Perch, yellow lake
- 39. Perch, white lake
- 40. Perch, other
- 41. Pollock
- 42. Rockfish
- 43. Sablefish
- 44. Salmon, lake
- 45. Salmon, other
- 46. Scallops
- 47. Shark
- 48. Shrimp/prawns
- 49. Snapper
- xx. Sole (#21. Flounder/Sole)
- 50. Squid
- 51. Sturgeon, lake
- 52. Sturgeon, other
- 53. Swordfish
- 54. Tilapia
- 55. Trout, lake
- 56. Trout, other
- 57. Tuna
- 58. Turbot
- 59. Whitefish, lake
- 60. Whitefish, other
- xx. Whiting (#24.Hake/Whiting)
- 61. Other

\*\*\*\*\*

15. Are the choices of which fish/seafood species to serve in this restaurant and of which suppliers to purchase this restaurant's fish/seafood from made by decisionmakers in this restaurant or elsewhere?

- A. Choice of Species  
(check only one) Decisionmaker
- Restaurant manager
  - Restaurant seafood buyer
  - Restaurant chef
  - Central buyer
  - Central buyer makes up list of alternatives that restaurant decisionmaker chooses from
  - Other (please specify) \_\_\_\_\_

- B. Choice of Supplier  
(check only one) Decisionmaker
- Restaurant manager
  - Restaurant seafood buyer
  - Restaurant chef
  - Central buyer
  - Central buyer makes up list of alternatives that restaurant decisionmaker chooses from
  - Other (please specify) \_\_\_\_\_

16. What percentage of your fish/seafood purchases are...?

- \_\_\_\_\_ % Fresh
- \_\_\_\_\_ % Frozen
- \_\_\_\_\_ % Previously frozen, slacked out
- 100 %

10. For this restaurant, what were average weekly sales of fish/seafood during the summer of 1996? \_\_\_\_\_ (dollars)

11. Have you sold any yellow perch in 1996?

- Yes
- No

12. If you have not sold any yellow perch in 1996, please indicate the reasons. (Check all that apply)

- No/low customer demand
- Too expensive
- Not available
- Available, but supply inconsistent
- Available, but quality inconsistent
- Other \_\_\_\_\_

13. Have you sold any walleye in 1996?

- Yes
- No

14. If you have not sold any walleye in 1996, please indicate the reasons. (Check all that apply)

- No/low customer demand
- Too expensive
- Not available
- Available, but supply inconsistent
- Available, but quality inconsistent
- Other \_\_\_\_\_



\*\*\*\*\*

**Code Numbers for Fish/Seafood Supplier Types**

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Processors
- 6. Fish Farmers/Aquaculture
- 7. Commercial Fishermen
- 8. Tribal Fishermen
- 9. Restaurants
- 10. Supermarkets
- 11. Seafood Specialty Retailers
- 12. Other

7. What types of firms typically supply your restaurant with fish/seafood? From the coded list of supplier types above, please write in the code numbers for the types of fish/seafood suppliers which are of primary and secondary (lesser) importance to your restaurant in terms of fish/seafood purchase quantities. (Only one code number per line please). Then, write in the percentages of your fish/seafood purchases for each category requested.

**Fish/Seafood Suppliers**

**Primary type** \_\_\_\_\_ (code number)

What percent of fish/seafood purchases from this supplier type are:

Fresh	_____ %	Frozen	_____ %	Prev. Frozen	_____ %	100%
-------	---------	--------	---------	--------------	---------	------

**Secondary type** \_\_\_\_\_ (code number)

What percent of fish/seafood purchases from this supplier type are:

Fresh	_____ %	Frozen	_____ %	Prev. Frozen	_____ %	100%
-------	---------	--------	---------	--------------	---------	------

**Secondary type** \_\_\_\_\_ (code number)

What percent of fish/seafood purchases from this supplier type are:

Fresh	_____ %	Frozen	_____ %	Prev. Frozen	_____ %	100%
-------	---------	--------	---------	--------------	---------	------

\*\*\*\*\*

**Code Numbers for Fish/Seafood Supplier Types**

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Processors
- 6. Fish Farmers/Aquaculture
- 7. Commercial Fishermen
- 8. Tribal Fishermen
- 9. Restaurants
- 10. Supermarkets
- 11. Seafood Specialty Retailers
- 12. Other

18. It could be the case that your choice of supplier varies depending upon the characteristics of the fish/seafood products you are purchasing. What supplier types do you typically use when purchasing fish/seafood items with the following characteristics? (Only one code number per line please)

**Code Number for Supplier Type of:**

- \_\_\_\_\_ Fresh shrimp
- \_\_\_\_\_ Frozen shrimp
- \_\_\_\_\_ Fresh ocean fish
- \_\_\_\_\_ Frozen ocean fish
- \_\_\_\_\_ Fresh lake fish
- \_\_\_\_\_ Frozen lake fish
- \_\_\_\_\_ Fresh farm-raised fish
- \_\_\_\_\_ Frozen farm-raised fish

---

If you have any additional comments about the marketing of fish and seafood, or anything else related to this survey, we would appreciate them.

Comments:

*Thank You  
for Your Time and Cooperation*

**Appendix B: Yellow Perch and Walleye (restaurant survey)**



**Purdue University**

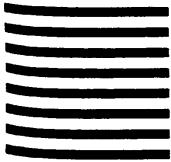
***Yellow Perch and Walleye***

**Purchases and Sales  
in the North Central Region  
by Restaurants**

**Sponsors:**

**North Central Regional Aquaculture Center  
National Sea Grant College Program  
Illinois-Indiana Sea Grant**

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## Purchases and Sales of Walleye

1. Do you sell walleye?     Yes  
     No (Skip to Yellow Perch section)
  
2. Rank the top four months in which customer demand for walleye is highest. (Rank the top 4: 1=highest demand, 2=2nd highest demand, etc.)
 

JAN	MAY	SEPT
_____	_____	_____
FEB	JUNE	OCT
_____	_____	_____
MAR	JULY	NOV
_____	_____	_____
APRIL	AUG	DEC
_____	_____	_____
  
3. Rank the top four months in which supply of walleye is highest. (Please rank the top 4 months: 1=highest supply, 2=2nd highest supply, etc.)
 

JAN	MAY	SEPT
_____	_____	_____
FEB	JUNE	OCT
_____	_____	_____
MAR	JULY	NOV
_____	_____	_____
APRIL	AUG	DEC
_____	_____	_____
  
4. Rank the top four months in which wholesale price you pay for walleye is highest. (Rank the top 4: 1=highest price, 2=2nd highest price, etc.)
 

JAN	MAY	SEPT
_____	_____	_____
FEB	JUNE	OCT
_____	_____	_____
MAR	JULY	NOV
_____	_____	_____
APRIL	AUG	DEC
_____	_____	_____
  
5. Does your restaurant typically sell walleye..? (Check only one)
  - Occasionally
  - Only during Lenten season
  - Summer months only
  - Commercial fishing season only (about April - November)
  - Year around
  - Other \_\_\_\_\_
  
6. How often does your restaurant sell walleye? (Check only one)
  - Daily
  - Once a week
  - Once a month
  - Other \_\_\_\_\_

**Thank You . . .** for responding to the Phase I survey of fish and seafood purchases/sales by restaurants in the North Central Region. This Phase II survey focuses on specific market information for yellow perch and walleye. The data you provide by responding to this survey, in conjunction with data from the Phase I survey, will: (1) provide evidence of restaurant market dynamics involving yellow perch and walleye; (2) enable the tracking of these two regionally popular species through market channels; (3) reveal which product forms and sizes are in greatest demand; and (4) show which areas may be undersupplied.

Market information from the Phase I and Phase II surveys will be disseminated for use by people in all sorts of positions where they are called upon to make sound, informed decisions regarding future aquaculture activity and investments. Potential data users include current and potential aquaculturists, state and local government officials, financial institutions, and university personnel.

The pool of restaurants in the North Central Region that offer yellow perch and/or walleye entrees is much smaller than the entire pool of restaurants in the Region. As a result, your cooperation in completing and returning this Phase II survey is of vital importance. **Your response will be completely confidential.** Without specific market information on walleye and yellow perch, it will be difficult to build a successful aquaculture industry that can supply your restaurant year-round with lake fish of the product form, size, quality, and price you desire.

Please help the future of both your business and the aquaculture industry in the North Central Region by completing this survey. If you have any questions about the survey, have any additional comments to share, or are interested in receiving a copy of the survey results, please feel free to contact: Dr. Marshall A. Martin, Department of Agricultural Economics, Purdue University, 1145 Krannert Building, West Lafayette, Indiana, 47907-1145; telephone (317) 494-4268.

*Thank you for taking the time to complete  
this survey*

\*\*\*\*\*

**Code Letters for Walleye Product Forms**

- A. Fresh whole/round
- B. Fresh dressed
- C. Fresh fillet, skinless
- D. Fresh fillet, skin on
- E. Fresh other (please specify) \_\_\_\_\_
- F. Frozen whole/round
- G. Frozen dressed
- H. Frozen fillet, skinless
- I. Frozen fillet, skin on
- J. Frozen other (please specify) \_\_\_\_\_

\*\*\*\*\*

7. Which two walleye product forms do you prefer to purchase when price and supply are not problems?

(Please write in one code letter per blank line from the list above.)

Product Form

Code Letter

- \_\_\_\_\_ Most preferred walleye product form
- \_\_\_\_\_ Next preferred walleye product form

8. Because of supply and demand conditions in 1996, which walleye product forms did you actually purchase most frequently (meaning the highest quantity) in 1996?

(Please write in one code letter per blank line from the list above.)

Product Form

Code Letter

- \_\_\_\_\_ First most frequently purchased walleye product form
- \_\_\_\_\_ Second frequently purchased walleye product form

9. The size, price, quantity, and frequency of any fish purchases are closely tied to product form. For the two most frequently purchased walleye product forms you indicated in the previous question (#8), please fill in the corresponding size, price, and quantity and frequency of delivery for 1996 purchases.

**First most frequently purchased walleye product form**

Size	Average Price	Delivery Schedule (write in total pounds for most common delivery schedule)
_____ oz. or lbs.	Paid July 1996	_____ lbs every 3-4 days
(circle which applies)	\$ _____/lb.	_____ lbs. every week
		_____ lbs. every month
		_____ lbs. Other _____

**Second frequently purchased walleye product form**

Size	Average Price	Delivery Schedule (write in total pounds for most common delivery schedule)
_____ oz. or lbs.	Paid July 1996	_____ lbs every 3-4 days
(circle which applies)	\$ _____/lb.	_____ lbs. every week
		_____ lbs. every month
		_____ lbs. Other _____

10. What types of firms supply you with walleye? Below is a coded list of supplier types such as wholesalers, brokers, etc. For your first and second most frequently purchased walleye product forms, please write in the code numbers for the supplier types from which you purchase the highest volume of each product form. (Please put only one code number on each blank)

\*\*\*\*\*

**Code Numbers for Supplier Types**

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Processors
- 6. Fish Farmers/Aquaculture
- 7. Commercial Fishermen
- 8. Tribal Fishermen
- 9. Restaurants
- 10. Supermarkets
- 11. Seafood Specialty Retailers
- 12. Other (please specify)

\*\*\*\*\*

**First most frequently purchased walleye product form**

Supplier Type

Code Number

- \_\_\_\_\_ Highest volume supplier type
- \_\_\_\_\_ 2nd highest volume supplier type

**Second most frequently purchased walleye product form**

Supplier Type

Code Number

- \_\_\_\_\_ Highest volume supplier type
- \_\_\_\_\_ 2nd highest volume supplier type

11. How much walleye did you purchase during an average week or month during the summer of 1996?

Pounds weekly \_\_\_\_\_

Or

Pounds monthly \_\_\_\_\_

12. Do you purchase farm-raised walleye? (Check only one)

- Yes, infrequently (less than once a month)
- Yes, regularly (at least once a month)
- No, but I am interested
- No, and I am not interested
- Not sure

## Purchases and Sales of Yellow (Lake) Perch

13. How much walleye do you think you might purchase weekly or monthly during the summer if aquaculture increased supplies enough that you could buy all you wanted at prices lower than recent years but still somewhat higher than prices for other species?

Pounds weekly \_\_\_\_\_

Or

Pounds monthly \_\_\_\_\_

14. If the walleye product form you prefer to purchase is not available (supply problem) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen
- Switch to a different size of the same product form
- Switch to a different walleye product form
- Switch suppliers temporarily
- Drop walleye from the menu temporarily
- Switch to a different fish species (please specify) \_\_\_\_\_
- Other strategy (please specify) \_\_\_\_\_

15. If the walleye product form you prefer to purchase is too high priced, (price problem) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen
- Switch to a different size of the same product form
- Switch to a different walleye product form
- Switch suppliers temporarily
- Drop walleye from the menu temporarily
- Switch to a different fish species (please specify) \_\_\_\_\_
- Other strategy (please specify) \_\_\_\_\_

1. Do you sell yellow perch?  Yes  
 No (Thank you please return the survey)

2. Rank the top four months in which customer demand for yellow perch is highest. (Rank the top 4: 1=highest demand, 2=2nd highest demand, etc.)

_____	JAN	_____	MAY	_____	SEPT
_____	FEB	_____	JUNE	_____	OCT
_____	MAR	_____	JULY	_____	NOV
_____	APRIL	_____	AUG	_____	DEC

3. Rank the top four months in which supply of yellow perch is highest. (Please rank the top 4 months: 1=highest supply, 2=2nd highest supply, etc.)

_____	JAN	_____	MAY	_____	SEPT
_____	FEB	_____	JUNE	_____	OCT
_____	MAR	_____	JULY	_____	NOV
_____	APRIL	_____	AUG	_____	DEC

4. Rank the top four months in which wholesale price you pay for yellow perch is highest. (Rank the top 4: 1=highest price, 2=2nd highest price, etc.)

_____	JAN	_____	MAY	_____	SEPT
_____	FEB	_____	JUNE	_____	OCT
_____	MAR	_____	JULY	_____	NOV
_____	APRIL	_____	AUG	_____	DEC

5. Does your restaurant typically sell yellow perch? (Check only one)

- Occasionally
- Only during Lenten season
- Summer months only
- Commercial fishing season only (about April - November)
- Year around
- Other \_\_\_\_\_

6. How often does your restaurant sell yellow perch? (Check only one)

- Daily
- Once a week
- Once a month
- Other \_\_\_\_\_

\*\*\*\*\*

**Code Letters for Yellow Perch Product Forms**

- A. Fresh whole/round
- B. Fresh fillet
- C. Fresh other (please specify) \_\_\_\_\_
- D. Frozen whole/round
- E. Frozen fillet
- F. Frozen other (please specify) \_\_\_\_\_

\*\*\*\*\*

7. Which two **yellow perch** product forms do you **prefer** to purchase when price and supply are not problems?

(Please write in one code letter per blank line from the list above.)

Product Form

Code Letter

- \_\_\_\_\_ Most preferred yellow perch product form
- \_\_\_\_\_ Next preferred yellow perch product form

8. Because of supply and demand conditions in 1996, which **yellow perch** product forms did you actually **purchase** most frequently (meaning the highest quantity) in 1996?

(Please write in one code letter per blank line from the list above.)

Product Form

Code Letter

- \_\_\_\_\_ First most frequently purchased yellow perch product form
- \_\_\_\_\_ Second frequently purchased yellow perch product form

9. The size, price, quantity, and frequency of any fish purchases are closely tied to product form. For the two most frequently purchased **yellow perch** product forms you indicated in the previous question (#8), please fill in the corresponding size, price, and quantity and frequency of delivery for 1996 purchases.

**First most frequently purchased yellow perch product form**

Average Price	Delivery Schedule (write in
Paid July 1996	total pounds for most
Size _____ oz.	common delivery schedule)
\$ _____/lb.	_____ lbs every 3-4 days
	_____ lbs. every week
	_____ lbs. every month
	_____ lbs. Other _____

**Second frequently purchased yellow perch product form**

Average Price	Delivery Schedule (write in
Paid July 1996	total pounds for most
Size _____ oz.	common delivery schedule)
\$ _____/lb.	_____ lbs every 3-4 days
	_____ lbs. every week
	_____ lbs. every month
	_____ lbs. Other _____

10. What types of firms supply you with **yellow perch**? Below is a coded list of supplier types such as wholesalers, brokers, etc. For your first and second most frequently purchased **yellow perch** product forms, please write in the code numbers for the supplier types from which you purchase the highest volume of each product form. (Only one code number per blank)

\*\*\*\*\*

**Code Numbers for Supplier Types**

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Processors
- 6. Fish Farmers/Aquaculture
- 7. Commercial Fishermen
- 8. Tribal Fishermen
- 9. Restaurants
- 10. Supermarkets
- 11. Seafood Specialty Retailers
- 12. Other (please specify) \_\_\_\_\_

\*\*\*\*\*

**First most frequently purchased yellow perch product form**

Supplier Type

Code Number

- \_\_\_\_\_ Highest volume supplier type
- \_\_\_\_\_ 2nd highest volume supplier type

**Second frequently purchased yellow perch product form**

Supplier Type

Code Number

- \_\_\_\_\_ Highest volume supplier type
- \_\_\_\_\_ 2nd highest volume supplier type

11. How much **yellow perch** did you purchase during an average week or month during the summer of 1996?

- Pounds weekly \_\_\_\_\_
- Or Pounds monthly \_\_\_\_\_

12. Do you purchase farm-raised **yellow perch**? (Check only one)

- Yes, infrequently (less than once a month)
- Yes, regularly (at least once a month)
- No, but I am interested
- No, and I am not interested
- Not sure

If you have any additional comments about the marketing of yellow perch and walleye, or anything else related to this survey, we would appreciate them.

Comments:

13. How much **yellow perch** do you think you might purchase weekly or monthly during the summer if aquaculture increased supplies enough that you could buy all you wanted at prices lower than recent years but still somewhat higher than prices for other species?

Pounds weekly \_\_\_\_\_

**Or**

Pounds monthly \_\_\_\_\_

14. If the **yellow perch** product form you **prefer** to purchase is not available (**supply problem**) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen
- Switch to a different size of the same product form
- Switch to a different **yellow perch** product form
- Switch suppliers temporarily
- Drop **yellow perch** from the menu temporarily
- Switch to a different fish species (please specify) \_\_\_\_\_
- Other strategy (please specify) \_\_\_\_\_

15. If the **yellow perch** product form you **prefer** to purchase is too high priced, (**price problem**) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen
- Switch to a different size of the same product form
- Switch to a different **yellow perch** product form
- Switch suppliers temporarily
- Drop **yellow perch** from the menu temporarily
- Switch to a different fish species (please specify) \_\_\_\_\_
- Other strategy (please specify) \_\_\_\_\_

*Thank You*  
*for Your Time and Cooperation*



---

# Appendix C: Supermarket Survey



Purdue University

## *Supermarket Survey*

Fish/Seafood Purchases and Sales in the  
North Central Region

Sponsors:

North Central Regional Aquaculture Center  
National Sea Grant College Program  
Illinois-Indiana Sea Grant

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.....

### About the Survey ...

Aquaculture is generating increasing interest in the U.S. In the North Central Region, both the production and marketing aspects of aquaculture are focusing in on two species having strong Regional but not National appeal: yellow perch and walleye.

Market information is vital for farmers and other entrepreneurs to successfully plan and establish aquaculture enterprises. However, most Regional aquaculture funding to date has focused on culture techniques. The purpose of this survey is to make retail grocer market information for the North Central Region on fish/seafood in general and on yellow perch and walleye in particular available to all interested persons. Survey data will be used by government officials, bankers, venture capitalists, current and potential aquaculturists, university researchers and extension personnel to make sound judgments regarding aquaculture investments and activities.

Supermarkets are a vital segment in the fish/seafood marketing channels of the Region. Your supermarket was randomly selected from the 22,000+ supermarkets in the North Central Region. Because of the great diversity of supermarkets spawned by the consumer-driven marketplace, your response is extremely important as representative of supermarkets in your state and with similar operational characteristics. **Your response will be completely confidential.** If your store sells yellow perch or walleye, a follow-up survey will be mailed to you so that specific market information on these two species can be discovered. This data will be critical for building a successful aquaculture industry that can supply your supermarket year-round with quality lake fish.

**Thank you** for providing invaluable help by completing this survey. If you have any questions about the survey, have any additional comments to share, or are interested in receiving a copy of the survey results, please feel free to contact: Dr. Marshall A. Martin, Department of Agricultural Economics, Purdue University, 1145 Krainert Building, West Lafayette, Indiana, 47907-1145; telephone (317) 494-4268.

### Store Characteristics

1. How close is your supermarket located to one of the Great Lakes?
  - 0 to 50 miles
  - 51 to 100 miles
  - More than 100 miles
2. Which best describes your supermarket? (**Check only one**)
  - Chain
  - Independent
3. Is the setting of your supermarket...? (**Check only one**)
  - Urban** (Chicago, Cincinnati, Cleveland, Columbus, Detroit, Indianapolis, Kansas City KS/MO, Milwaukee, Minneapolis/St. Paul, or St. Louis/East St. Louis)
  - Suburban** (suburb of an urban city listed above)
  - Major metro** (city and surrounding areas with population 250,000 to less than one million)
  - Minor metro** (city and surrounding areas with population 100,000 to 249,999)
  - Small town/rural** (population centers less than 100,000)
4. How many total square feet are in this store? (**Check only one**)
  - 10,000 or less
  - 10,001 to 15,000
  - 15,001 to 20,000
  - 20,001 to 25,000
  - 25,001 to 30,000
  - 30,001 to 35,000
  - 35,001 to 40,000
  - Over 40,000
5. For the groups listed below, about what percent of your total customer base does each group make up? (Numbers should sum to 100%)

_____ %	Asian
_____ %	Black
_____ %	Hispanic
_____ %	White
_____ %	Other (please specify)
100	%

6. Which category best describes the annual gross sales of this store for the last fiscal year? **(Check only one)**

- (Millions) (Millions)
- \$2 to \$3.9       \$12 to \$19.9
  - \$4 to \$7.9       \$20 or more
  - \$8 to \$11.9

**Fish/Seafood Purchases & Sales**

7. Do you sell fish/seafood other than the frozen, pre-packaged, branded kind such as Gorton's or Mrs. Paul's?

- Yes -- I sell fresh and/or frozen seafood
- No -- I only sell fish/seafood that is of the frozen/pre-packaged/branded kind

If you answered NO, you may stop at this point and return the survey.

8. Which of the following best describes the fish/seafood service you provide to your customers? **(Check only one)**

- Full-service with some self-service
- Self-service

9. How many square feet are allocated to the Seafood Department?  
\_\_\_\_\_ (sq. ft.)

10. About what percent of your supermarket's total food sales are from fish/seafood?  
\_\_\_\_\_ (percent)

11. What are your five best selling fish/seafood species? Please write in the code numbers from the coded list on the adjacent page. **(Only one code number per line)**

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_
- (4) \_\_\_\_\_
- (5) \_\_\_\_\_

\*\*\*\*\*

**Code Numbers for Fish/Seafood Species**

- 1. Abalone
- 2. Bass, hybrid striped
- 3. Bass, lake
- 4. Bass, other
- 5. Bluefish
- 6. Buffalo fish, lake
- 7. Carp, lake
- 8. Catfish, ocean
- 9. Channel catfish, farm-raised
- 10. Channel catfish, lake
- 11. Calamari
- 12. Clams
- 13. Cod
- 14. Crab
- 15. Crawfish/crayfish
- 16. Croaker
- 17. Cuttlefish
- 18. Drum, freshwater (lake)
- 19. Eel, lake
- 20. Eel, ocean
- 21. Flounder/Sole (flatfish)
- 22. Grouper
- 23. Haddock
- 24. Hake/Whiting
- 25. Halibut
- 26. Herring, lake
- 27. Herring, other
- 28. Hoki
- 29. KingKlip
- 30. Lobster
- 31. Mackerel
- 32. Mahi Mahi
- 33. Monkfish
- 34. Mullet
- 35. Orange Roughy
- 36. Oysters
- 37. Perch, ocean
- 38. Perch, yellow lake
- 39. Perch, white lake
- 40. Perch, other
- 41. Pollock
- 42. Rockfish
- 43. Sablefish
- 44. Salmon, lake
- 45. Salmon, other
- 46. Scallops
- 47. Shark
- 48. Shrimp/prawns
- 49. Snapper
- xx. Sole (#21.Flounder/Sole)
- 50. Squid
- 51. Sturgeon, lake
- 52. Sturgeon, other
- 53. Swordfish
- 54. Tilapia
- 55. Trout, lake
- 56. Trout, other
- 57. Tuna
- 58. Turbot
- 59. Whitefish, lake
- 60. Whitefish, other
- xx. Whiting (#24.Hake/Whiting)
- 61. Other

\*\*\*\*\*

12. For this supermarket, what were average weekly sales of fish/seafood during the summer of 1996 ? \_\_\_\_\_ (dollars)

13. Have you sold any yellow perch in 1996?

- Yes
- No

14. If you have not sold any yellow perch in 1996, please indicate the reasons. (Check all that apply)

- No/low customer demand
- Too expensive
- Not available
- Available, but supply inconsistent
- Available, but quality inconsistent
- Other \_\_\_\_\_

15. Have you sold any walleye in 1996?

- Yes
- No

16. If you have not sold any walleye in 1996, please indicate the reasons. (Check all that apply)

- No/low customer demand
- Too expensive
- Not available
- Available, but supply inconsistent
- Available, but quality inconsistent
- Other \_\_\_\_\_

17. Are the choices of which fish/seafood species to sell in this store and of which suppliers to purchase this store's fish/seafood from made by decisionmakers in this store or elsewhere?

A. Choice of Species

(check only one) Decisionmaker

- Store manager
- Store seafood manager
- Central buyer
- Central buyer makes up list of alternatives that supermarket decisionmaker chooses from
- Other (please specify) \_\_\_\_\_

B. Choice of Supplier

(check only one) Decisionmaker

- Store manager
- Store seafood manager
- Central buyer
- Central buyer makes up list of alternatives that supermarket decisionmaker chooses from
- Other (please specify) \_\_\_\_\_

18. Please indicate below what percentage of this store's fish/seafood purchases and sales are live, fresh, and frozen.

Purchases	Sales
_____ % Live	_____ % Live
_____ % Fresh	_____ % Fresh
_____ % Frozen	_____ % Frozen
_____ % Previously frozen, slacked out	_____ % Previously frozen, slacked out
_____ % Frozen/pre-packaged/branded	_____ % Frozen/pre-packaged/branded
100 %	100 %

\*\*\*\*\*

**Code Numbers for Fish/Seafood Supplier Types**

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Processors
- 6. Fish Farmers/Aquaculture
- 7. Commercial Fishermen
- 8. Tribal Fishermen
- 9. Restaurants
- 10. Supermarkets
- 11. Seafood Specialty Retailers
- 12. Other

19. What types of firms typically supply your store with fish/seafood? From the coded list of supplier types above, please write in the code numbers for the types of fish/seafood suppliers which are of primary and secondary (lesser) importance to your store in terms of fish/seafood purchase quantities. (Only one code number per line please)

**Fish/Seafood Suppliers**                      **Code Number**

Primary Type \_\_\_\_\_

Secondary Type A \_\_\_\_\_

Secondary Type B \_\_\_\_\_

20. For each of the supplier types you listed in Question #19, please indicate what percent of total fish/seafood purchases from each supplier type are live, fresh, etc.

	Fish/Seafood Supplier Types	
	Primary	Secondary B
Live	_____ %	_____ %
Fresh	_____ %	_____ %
Frozen	_____ %	_____ %
Previously frozen	_____ %	_____ %
Frozen/pre-packaged/branded	_____ %	_____ %
	100	100
	%	%

21. It could be the case that your choice of supplier varies depending upon the characteristics of the fish/seafood products you are purchasing. What supplier types do you typically use when purchasing fish/seafood items with the following characteristics? (Only one code number per line please)

**Code Number for Supplier Type of:**

\_\_\_\_\_ Fresh shrimp

\_\_\_\_\_ Frozen shrimp

\_\_\_\_\_ Fresh ocean fish

\_\_\_\_\_ Frozen ocean fish

\_\_\_\_\_ Fresh lake fish

\_\_\_\_\_ Frozen lake fish

\_\_\_\_\_ Fresh farm-raised fish

\_\_\_\_\_ Frozen farm-raised fish

---

If you have any additional comments about the marketing of fish and seafood, or anything else related to this survey, we would appreciate them.

Comments:

*Thank You  
for Your Time and Cooperation*

**Appendix D: Yellow Perch and Walleye (supermarket survey)**

**Purdue University**



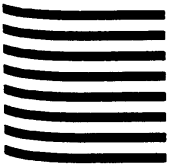
***Yellow Perch and Walleye***

**Purchases and Sales  
in the North Central Region  
by Supermarkets**

**Sponsors:**

**North Central Regional Aquaculture Center  
National Sea Grant College Program  
Illinois-Indiana Sea Grant**

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## Purchases and Sales of Walleye

1. Do you sell walleye?  Yes  No (Skip to Yellow Perch section)
2. Rank the top four months in which customer demand for walleye is highest. (Rank the top 4: 1=highest demand, 2=2nd highest demand, etc.)
 

JAN	MAY	SEPT
FEB	JUNE	OCT
MAR	JULY	NOV
APRIL	AUG	DEC
3. Rank the top four months in which supply of walleye is highest. (Please rank the top 4 months: 1=highest supply, 2=2nd highest supply, etc.)
 

JAN	MAY	SEPT
FEB	JUNE	OCT
MAR	JULY	NOV
APRIL	AUG	DEC
4. Rank the top four months in which wholesale price you pay for walleye is highest. (Rank the top 4: 1=highest price, 2=2nd highest price, etc.)
 

JAN	MAY	SEPT
FEB	JUNE	OCT
MAR	JULY	NOV
APRIL	AUG	DEC
5. Does your store typically sell walleye..? (Check only one)
 

<input type="checkbox"/> Occasionally
<input type="checkbox"/> Only during Lenten season
<input type="checkbox"/> Summer months only
<input type="checkbox"/> Commercial fishing season only (about April - November)
<input type="checkbox"/> Year around
<input type="checkbox"/> Other _____
6. How often does your store typically sell walleye? (Check only one)
 

<input type="checkbox"/> Daily
<input type="checkbox"/> Once a week
<input type="checkbox"/> Once a month
<input type="checkbox"/> Other _____

Thank You . . . for responding to the Phase I survey of fish and seafood purchases/sales by supermarkets in the North Central Region. This Phase II survey focuses on specific market information for yellow perch and walleye. The data you provide by responding to this survey, in conjunction with data from the Phase I survey, will: (1) provide evidence of retail grocery market dynamics involving yellow perch and walleye; (2) enable the tracking of these two regionally popular species through market channels; (3) reveal which product forms and sizes are in greatest demand; and (4) show which areas may be undersupplied.

Market information from the Phase I and Phase II surveys will be disseminated for use by people in all sorts of positions where they are called upon to make sound, informed decisions regarding future aquaculture activity and investments. Potential data users include current and potential aquaculturists, state and local government officials, financial institutions, and university personnel.

The pool of supermarkets in the North Central Region that sell yellow perch and/or walleye is much smaller than the entire pool of supermarkets in the Region. As a result, your cooperation in completing and returning this Phase II survey is of vital importance. Your response will be completely confidential. Without specific market information on walleye and yellow perch, it will be difficult to build a successful aquaculture industry that can supply your supermarket year-round with lake fish of the product form, size, quality, and price you desire.

Please help the future of both your business and the aquaculture industry in the North Central Region by completing this survey. If you have any questions about the survey, have any additional comments to share, or are interested in receiving a copy of the survey results, please feel free to contact: Dr. Marshall A. Martin, Department of Agricultural Economics, Purdue University, 1145 Krannert Building, West Lafayette, Indiana, 47907-1145; telephone (317) 494-4268.

*Thank you for taking the time to complete this survey*



10. What types of firms supply your store with walleye? Below is a coded list of supplier types such as wholesalers, brokers, etc. For your first and second most frequently purchased walleye product forms, please write in the code numbers for the supplier types from which you purchase the highest volume of each product form. (Please put only one code number on each blank)

\*\*\*\*\*  
 Code Numbers for Supplier Types  
 \*\*\*\*\*

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Processors
- 6. Fish Farmers/Aquaculture
- 7. Commercial Fishermen
- 8. Tribal Fishermen
- 9. Restaurants
- 10. Supermarkets
- 11. Seafood Specialty Retailers
- 12. Other (please specify)

\*\*\*\*\*

**First most frequently purchased walleye product form**

Supplier Type \_\_\_\_\_ Highest volume supplier type  
 Code Number \_\_\_\_\_ 2nd highest volume supplier type

**Second most frequently purchased walleye product form**

Supplier Type \_\_\_\_\_ Highest volume supplier type  
 Code Number \_\_\_\_\_ 2nd highest volume supplier type

11. What walleye product forms do you sell? From the coded list of product forms on the opposite page, please write in the code letters for your three best-selling product forms. (Use only one code number per line.) Then, write in the percent of total walleye sales for each product form.

Code Letter of Best Selling Product Forms	Percent of Total Walleye Sales by Product Form
1st _____	_____ %
2nd _____	_____ %
3rd _____	_____ %
Other _____	_____ %
<b>Total</b>	<b>100%</b>

12. For your best-selling walleye product form, what was the retail price in July 1996? \$ \_\_\_\_\_ /lb.

**Code Letters for Walleye Product Forms**

- A. Fresh whole/round
- B. Fresh dressed
- C. Fresh fillet, skinless
- D. Fresh fillet, skin on
- E. Fresh other (please specify) \_\_\_\_\_
- F. Frozen whole/round
- G. Frozen dressed
- H. Frozen fillet, skinless
- I. Frozen fillet, skin on
- J. Frozen other (please specify) \_\_\_\_\_
- K. Live

\*\*\*\*\*

7. Which two walleye product forms do you prefer to purchase when price and supply are not problems?  
 (Please write in one code letter per blank line from the list above.)  
 Product Form \_\_\_\_\_  
 Code Letter \_\_\_\_\_

Most preferred walleye product form \_\_\_\_\_  
 Next preferred walleye product form \_\_\_\_\_

8. Because of supply and demand conditions in 1996, which walleye product forms did you actually purchase most frequently (meaning the highest quantity) in 1996?  
 (Please write in one code letter per blank line from the list above.)  
 Product Form \_\_\_\_\_  
 Code Letter \_\_\_\_\_

First most frequently purchased walleye product form \_\_\_\_\_  
 Second frequently purchased walleye product form \_\_\_\_\_

9. The size, price, quantity, and frequency of any fish purchases are closely tied to product form. For the two most frequently purchased walleye product forms you indicated in the previous question (#8), please fill in the corresponding size, price, and quantity and frequency of delivery for 1996 purchases.

**First most frequently purchased walleye product form**  
 Delivery Schedule (write in total pounds for most common delivery schedule)  
 Average Price Paid July 1996 \$ \_\_\_\_\_ /lb.  
 Size \_\_\_\_\_ lbs. every 3-4 days  
 \_\_\_\_\_ lbs. every week  
 \_\_\_\_\_ lbs. every month  
 \_\_\_\_\_ lbs. Other

**Second frequently purchased walleye product form**  
 Delivery Schedule (write in total pounds for most common delivery schedule)  
 Average Price Paid July 1996 \$ \_\_\_\_\_ /lb.  
 Size \_\_\_\_\_ lbs. every 3-4 days  
 \_\_\_\_\_ lbs. every week  
 \_\_\_\_\_ lbs. every month  
 \_\_\_\_\_ lbs. Other

## Purchases and Sales of Yellow (Lake) Perch

13. How much walleye did you purchase during an average week or month during the summer of 1996?

Pounds weekly \_\_\_\_\_

1. Do you sell yellow perch?  Yes  No (Thank you please return the survey)

Or  
Pounds monthly \_\_\_\_\_

2. Rank the top four months in which customer demand for yellow perch is highest. (Rank the top 4: 1=highest demand, 2=2nd highest demand, etc.)

_____	JAN	_____	MAY	_____	SEPT
_____	FEB	_____	JUNE	_____	OCT
_____	MAR	_____	JULY	_____	NOV
_____	APRIL	_____	AUG	_____	DEC

14. Do you purchase farm-raised walleye? (Check only one)

- Yes, infrequently (less than once a month)  
 Yes, regularly (at least once a month)  
 No, but I am interested  
 No, and I am not interested  
 Not sure

3. Rank the top four months in which supply of yellow perch is highest. (Please rank the top 4 months: 1=highest supply, 2=2nd highest supply, etc.)

_____	JAN	_____	MAY	_____	SEPT
_____	FEB	_____	JUNE	_____	OCT
_____	MAR	_____	JULY	_____	NOV
_____	APRIL	_____	AUG	_____	DEC

Pounds weekly \_\_\_\_\_

Or  
Pounds monthly \_\_\_\_\_

15. How much walleye do you think you might purchase weekly or monthly during the summer if aquaculture increased supplies enough that you could buy all you wanted at prices lower than recent years but still somewhat higher than prices for other species?

- Switch from fresh to frozen  
 Switch to a different size of the same product form  
 Switch to a different walleye product form  
 Switch suppliers temporarily  
 Drop walleye from the case temporarily  
 Switch to a different fish species (please specify) \_\_\_\_\_  
 Other strategy (please specify) \_\_\_\_\_

4. Rank the top four months in which wholesale price you pay for yellow perch is highest. (Rank the top 4: 1=highest price, 2=2nd highest price, etc.)

_____	JAN	_____	MAY	_____	SEPT
_____	FEB	_____	JUNE	_____	OCT
_____	MAR	_____	JULY	_____	NOV
_____	APRIL	_____	AUG	_____	DEC

5. Does your store typically sell yellow perch...? (Check only one)

- Occasionally  
 Only during Lenten season  
 Summer months only  
 Commercial fishing season only (about April - November)  
 Year around  
 Other \_\_\_\_\_

16. If the walleye product form you prefer to purchase is not available (supply problem) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen  
 Switch to a different size of the same product form  
 Switch to a different walleye product form  
 Switch suppliers temporarily  
 Drop walleye from the case temporarily  
 Switch to a different fish species (please specify) \_\_\_\_\_  
 Other strategy (please specify) \_\_\_\_\_

6. How often does your store typically sell yellow perch? (Check only one)

- Daily  
 Once a week  
 Once a month  
 Other \_\_\_\_\_

17. If the walleye product form you prefer to purchase is too high priced, (price problem) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen  
 Switch to a different size of the same product form  
 Switch to a different walleye product form  
 Switch suppliers temporarily  
 Drop walleye from the case temporarily  
 Switch to a different fish species (please specify) \_\_\_\_\_  
 Other strategy (please specify) \_\_\_\_\_

\*\*\*\*\*  
**Code Letters for Yellow Perch Product Forms**  
 A. Fresh whole/round  
 B. Fresh fillet  
 C. Fresh other (please specify) \_\_\_\_\_  
 D. Frozen whole/round  
 E. Frozen fillet  
 F. Frozen other (please specify) \_\_\_\_\_  
 G. Live \_\_\_\_\_

\*\*\*\*\*  
 7. Which two yellow perch product forms do you prefer to purchase when price and supply are not problems?  
 (Please write in one code letter per blank line from the list above.)  
 Product Form \_\_\_\_\_  
 Code Letter \_\_\_\_\_  
 Most preferred yellow perch product form \_\_\_\_\_  
 Next preferred yellow perch product form \_\_\_\_\_

8. Because of supply and demand conditions in 1996, which yellow perch product forms did you actually purchase most frequently (meaning the highest quantity) in 1996?  
 (Please write in one code letter per blank line from the list above.)  
 Product Form \_\_\_\_\_  
 Code Letter \_\_\_\_\_

9. The size, price, quantity, and frequency of any fish purchases are closely tied to product form. For the two most frequently purchased yellow perch product forms you indicated in the previous question (#8), please fill in the corresponding size, price, and quantity and frequency of delivery for 1996 purchases.  
**First most frequently purchased yellow perch product form**  
 Delivery Schedule (write in total pounds for most common delivery schedule)  
 \_\_\_\_\_ lbs. every 3-4 days  
 \_\_\_\_\_ lbs. every week  
 \_\_\_\_\_ lbs. every month  
 \_\_\_\_\_ lbs. Other \_\_\_\_\_  
 Average Price Paid July 1996 \$ \_\_\_\_\_/lb.  
 Size \_\_\_\_\_ oz.  
**Second frequently purchased yellow perch product form**  
 Delivery Schedule (write in total pounds for most common delivery schedule)  
 \_\_\_\_\_ lbs. every 3-4 days  
 \_\_\_\_\_ lbs. every week  
 \_\_\_\_\_ lbs. every month  
 \_\_\_\_\_ lbs. Other \_\_\_\_\_  
 Average Price Paid July 1996 \$ \_\_\_\_\_/lb.  
 Size \_\_\_\_\_ oz.

10. What types of firms supply your store with yellow perch? Below is a coded list of supplier types such as wholesalers, brokers, etc. For your first and second most frequently purchased yellow perch product forms, please write in the code numbers for the supplier types from which you purchase the highest volume of each product form. (Only one code number per blank)  
 \*\*\*\*\*

- Code Numbers for Supplier Types**
1. Seafood Wholesalers
  2. Grocery Wholesalers
  3. Foodservice Distributors
  4. Brokers
  5. Processors
  6. Fish Farmers/Aquaculture
  7. Commercial Fishermen
  8. Tribal Fishermen
  9. Restaurants
  10. Supermarkets
  11. Seafood Specialty Retailers
  12. Other (please specify) \_\_\_\_\_

\*\*\*\*\*

**First most frequently purchased yellow perch product form**

Supplier Type \_\_\_\_\_  
 Code Number \_\_\_\_\_  
 Highest volume supplier type \_\_\_\_\_  
 2nd highest volume supplier type \_\_\_\_\_

**Second frequently purchased yellow perch product form**

Supplier Type \_\_\_\_\_  
 Code Number \_\_\_\_\_  
 Highest volume supplier type \_\_\_\_\_  
 2nd highest volume supplier type \_\_\_\_\_

11. What yellow perch product forms do you sell? From the coded list of product forms on the opposite page, please write in the code letters for your three best-selling product forms. (Use only one code number per line.) Then, write in the percent of total yellow perch sales for each product form.

Code Letter of Best Selling Product Forms		Percent of Total Yellow Perch Sales by Product Form	
1st	_____	_____	_____ %
2nd	_____	_____	_____ %
3rd	_____	_____	_____ %
Other _____		Total	100%

12. For your best-selling yellow perch product form, what was the retail price in July 1996? \$ \_\_\_\_\_ / lb.

How much **yellow perch** did you purchase during an average week or month during the **summer of 1996**?

Pounds weekly \_\_\_\_\_

**Or**

Pounds monthly \_\_\_\_\_

Do you purchase farm-raised **yellow perch**? (**Check only one**)

- Yes, infrequently (less than once a month)
- Yes, regularly (at least once a month)
- No, but I am interested
- No, and I am not interested
- Not sure

How much **yellow perch** do you think you might purchase weekly or monthly during the summer if aquaculture increased supplies enough that you could buy all you wanted at prices lower than recent years but still somewhat higher than prices for other species?

Pounds weekly \_\_\_\_\_

**Or**

Pounds monthly \_\_\_\_\_

If the **yellow perch** product form you **prefer** to purchase is not available (**supply problem**) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen
- Switch to a different size of the same product form
- Switch to a different **yellow perch** product form
- Switch suppliers temporarily
- Drop **yellow perch** from the case temporarily
- Switch to a different fish species (please specify) \_\_\_\_\_
- Other strategy (please specify) \_\_\_\_\_

If the **yellow perch** product form you **prefer** to purchase is too high priced, (**price problem**) which of the following strategies do you use to solve your problem? (Check all that apply.)

- Switch from fresh to frozen
- Switch to a different size of the same product form
- Switch to a different **yellow perch** product form
- Switch suppliers temporarily
- Drop **yellow perch** from the case temporarily
- Switch to a different fish species (please specify) \_\_\_\_\_
- Other strategy (please specify) \_\_\_\_\_

If you have any additional comments about the marketing of yellow perch and walleye, or anything else related to this survey, we would appreciate them.

Comments:

*Thank You  
for Your Time and Cooperation*

# Appendix E: Wholesaler/Retailer Survey



Purdue University

## Wholesaler/Retailer Survey

Fish/Seafood Purchases and Sales in the  
North Central Region

Sponsors:

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## About the Survey ...

Aquaculture is generating increasing interest in the U.S. In the North Central Region, both the production and marketing aspects of aquaculture are focusing in on two species having strong Regional but not national appeal: yellow perch and walleye.

Market information is vital for farmers and other entrepreneurs to successfully plan and establish aquaculture enterprises. However, most Regional aquaculture funding to date has focused on culture techniques. The purpose of this survey is to make wholesale market information for the North Central Region on fish/seafood in general and yellow perch and walleye in particular available to all interested persons. Survey data will be used by government officials, bankers, venture capitalists, current and potential aquaculturists, university researchers and extension personnel to make sound judgments regarding aquaculture investments and activities.

Wholesalers are a vital segment in the fish/seafood marketing channels of the Region. Your firm is one of a small number of wholesale food firms located in the North Central Region. Because of the small number and diversity of wholesale firms in the Region, your response is extremely important. **Your response will be completely confidential.**

**Thank you** for providing invaluable help by completing this survey. These data will be critical for building a successful aquaculture industry that can supply your firm year-round with quality lake fish. If you have any questions about the survey, have any additional comments to share, or are interested in receiving a copy of the survey results, please feel free to contact: Dr. Marshall A. Martin, Department of Agricultural Economics, Purdue University, 1145 Krannert Building, West Lafayette, Indiana, 47907-1145; telephone (317) 494-4268.

## I. General Fish/Seafood Purchases & Sales

- Which category best describes your firm's annual total food sales for the last fiscal year? (Check only one)
  - \$10,000 or less
  - \$10,001 to \$50,000
  - \$50,001 to \$100,000
  - \$100,001 to \$250,000
  - \$25,001 to \$500,000
  - \$500,001 to \$1 million
  - \$1,001 to \$2.5 million
  - \$2,501 to \$5 million
  - Over \$5 million
- Do you sell fish/seafood other than the frozen, pre-packaged, branded kind such as Gorton's or Mrs. Paul's? (Check only one)
  - Yes -- I sell fresh and/or frozen seafood
  - No -- I only sell fish/seafood that is of the frozen/pre-packaged/branded kind
  - No -- I do not sell any fish/seafood (thank you, please answer Question #5 then return survey)

- About what percent of your firm's total food sales are from fish/seafood? \_\_\_\_\_ (percent)

- What percent of your firm's fish/seafood purchases and sales are?
 

	Purchases	Sales
Live	_____ %	_____ %
Fresh	_____ %	_____ %
Frozen	_____ %	_____ %
Previously frozen, stacked out	_____ %	_____ %
Frozen/pre-packaged/branded	_____ %	_____ %
	100%	100%

\*\*\*\*\*  
**Code Numbers for Firm/Customer/Supplier Types**  
 1. Seafood Wholesalers  
 2. Grocery Wholesalers  
 3. Foodservice Distributors  
 4. Brokers  
 5. Importer/exporters  
 6. Processors  
 \*\*\*\*\*  
 7. Fish Farmers  
 8. Commercial Fishermen  
 9. Tribal Fishermen  
 10. Restaurants  
 11. Supermarkets  
 \*\*\*\*\*  
 12. Seafood Specialty Retailers  
 13. Final Consumers  
 14. Other Foodservice  
 15. Other  
 \*\*\*\*\*

5. Where is your firm positioned in the fish/seafood marketing channels? Of the firm types listed above, please write in the code number for the firm type that best describes your primary role in fish/seafood marketing channels and the code numbers for the firm types that best describe your firm's secondary, less important roles. (One code number per blank line please)

Code Number for Your Firm Type:	Primary Role	Secondary Role	Secondary Role	Secondary Role
_____	_____	_____	_____	_____

6. What types of firms typically supply your firm with fish/seafood? From the coded list of firm types above, please write in the code numbers for the top five types of fish/seafood suppliers in terms of volume of purchases. (One code per line.) Then, write in the percent of total fish/seafood purchases from each supplier type.

	Code Number of Supplier Type	Percent of Total Fish/Seafood Purchases from Each Supplier Type
1st	_____	_____ %
2nd	_____	_____ %
3rd	_____	_____ %
4th	_____	_____ %
5th	_____	_____ %
Other	_____	_____ %
<b>Total</b>		<b>100 %</b>

7. What types of firms are your customers of fish/seafood? From the coded list of firm types above, please write in the code numbers for the top five types of customers you serve in terms of volume of sales. (Use only one code number per line, and only use the same code number once.) Then, write in the percentage of your total fish/seafood sales to each customer type.

	Code Number of Customer Type	Percent of Total Fish/Seafood Sales to Each Customer Type
1st	_____	_____ %
2nd	_____	_____ %
3rd	_____	_____ %
4th	_____	_____ %
5th	_____	_____ %
Other	_____	_____ %
<b>Total</b>		<b>100 %</b>

8. For fish/seafood with the following characteristics, what types of firms are your primary suppliers and customers for these kinds of products? (Only one code number per line please)

Code Number of Primary Supplier Type	Code Number of Primary Customer Type
_____ Fresh shrimp	_____ Fresh shrimp
_____ Frozen shrimp	_____ Frozen shrimp
_____ Fresh ocean fish	_____ Fresh ocean fish
_____ Frozen ocean fish	_____ Frozen ocean fish
_____ Fresh lake fish	_____ Fresh lake fish
_____ Frozen lake fish	_____ Frozen lake fish
_____ Fresh farm-raised fish	_____ Fresh farm-raised fish
_____ Frozen farm-raised fish	_____ Frozen farm-raised fish

9. For this firm, what were average weekly sales of fish/seafood during the summer of 1996? \_\_\_\_\_ (dollars)

## II. Purchases and Sales of Walleye

0. What are your five best-selling fish/seafood species? Please write in the code numbers from the list below. (One code per line)

- (1) \_\_\_\_\_ (4) \_\_\_\_\_  
 (2) \_\_\_\_\_ (5) \_\_\_\_\_  
 (3) \_\_\_\_\_

\*\*\*\*\*

### Code Numbers for Fish/Seafood Species

1. Abalone
2. Bass, hybrid striped
3. Bass, lake
4. Bass, other
5. Bluefish
6. Buffalo fish, lake
7. Carp, lake
8. Catfish, ocean
9. Channel catfish, farm-raised
10. Channel catfish, lake
11. Calamari
12. Clams
13. Cod
14. Crab
15. Crawfish/crayfish
16. Croaker
17. Cuttlefish
18. Drum, freshwater (lake)
19. Eel, lake
20. Eel, ocean
21. Flounder/Sole (flatfish)
22. Grouper
23. Haddock
24. Hake/Whiting
25. Halibut
26. Herring, lake
27. Herring, other
28. Hoki
29. KingKlip
30. Lobster
31. Mackerel
32. Mahi Mahi
33. Monkfish
34. Mullet
35. Orange Roughy
36. Oysters
37. Perch, ocean
38. Perch, yellow lake
39. Perch, white lake
40. Perch, other
41. Pollock
42. Rockfish
43. Sablefish
44. Salmon, lake
45. Salmon, other
46. Scallops
47. Shark
48. Shrimp/prawns
49. Snapper
- xx. Sole (#21, Flounder/Sole)
50. Squid
51. Sturgeon, lake
52. Sturgeon, other
53. Swordfish
54. Tilapia
55. Trout, lake
56. Trout, other
57. Tuna
58. Turbot
59. Whitefish, lake
60. Whitefish, other
- xx. Whiting (#24, Hake/Whiting)
61. Other
62. Walleye

\*\*\*\*\*

1. Did you purchase walleye in 1996?

- Yes  
 No

2. If you **did not** purchase walleye in 1996, please indicate the reasons. (Check all that apply, then skip to Section III)

- No/low customer demand  
 Too expensive  
 Not available  
 Available, but supply inconsistent  
 Available, but quality inconsistent  
 Other \_\_\_\_\_

3. Rank the top four months in which **wholesale price** you pay for walleye is highest. (Rank the top 4: 1=highest price, 2=2nd highest price, etc.)

- |       |       |       |      |       |      |
|-------|-------|-------|------|-------|------|
| _____ | JAN   | _____ | MAY  | _____ | SEPT |
| _____ | FEB   | _____ | JUNE | _____ | OCT  |
| _____ | MAR   | _____ | JULY | _____ | NOV  |
| _____ | APRIL | _____ | AUG  | _____ | DEC  |

4. Rank the top four months in which **demand** for walleye is highest. (Rank the top 4: 1=highest demand, 2=2nd highest demand, etc.)

- |       |       |       |      |       |      |
|-------|-------|-------|------|-------|------|
| _____ | JAN   | _____ | MAY  | _____ | SEPT |
| _____ | FEB   | _____ | JUNE | _____ | OCT  |
| _____ | MAR   | _____ | JULY | _____ | NOV  |
| _____ | APRIL | _____ | AUG  | _____ | DEC  |

5. Does your firm typically handle walleye? (Check only one)

- Occasionally  
 Lenten Season only  
 Summer months only  
 Commercial fishing season only (about April - November)  
 Year around  
 Other \_\_\_\_\_



\*\*\*\*\*

**Code Letters for Walleye Product Forms**

- 1. Fresh whole/round
- 2. Fresh dressed
- 3. Fresh fillet, skinless
- 4. Fresh fillet, skin on
- 5. Fresh other (please specify) \_\_\_\_\_
- 6. Frozen whole/round
- 7. Frozen dressed
- 8. Frozen fillet, skinless
- 9. Frozen fillet, skin on
- 10. Frozen other (please specify) \_\_\_\_\_

\*\*\*\*\*

**Code Numbers for Firm/Customer/Supplier Types**

- 1. Seafood Wholesalers
- 2. Grocery Wholesalers
- 3. Foodservice Distributors
- 4. Brokers
- 5. Importer/exporters
- 6. Processors
- 7. Fish Farmers
- 8. Commercial Fishermen
- 9. Tribal Fishermen
- 10. Restaurants
- 11. Supermarkets
- 12. Seafood Specialty Retailers
- 13. Final Consumers
- 14. Other Foodservice
- 15. Other

\*\*\*\*\*

6. What product forms of walleye do you purchase? From the coded list above, please write in the code letters for the top five walleye product forms in terms of volume of purchases. (Use only one code number per line.) Then, write in the percentage that each product form makes up of your total walleye purchases.

Code Letter of Highest Volume Product Form	Percent of Total Walleye Purchases
1st _____	_____ %
2nd _____	_____ %
3rd _____	_____ %
4th _____	_____ %
5th _____	_____ %
Other _____	_____ %
<b>Total</b>	<b>100 %</b>

7. What types of firms supply you with walleye? A coded list of firm types is located above. For each of the top five walleye product forms you purchase, as indicated in the previous question, please list the code numbers of the supplier types that sell you the most of each product form. (One code per blank)

Highest Volume Walleye Product Form	Code Numbers for Supplier Type				
	Highest Volume Supplier Type	2nd Highest Volume Supplier Type	3rd Highest Volume Supplier Type	4th Highest Volume Supplier Type	5th Highest Volume Supplier Type
1st _____	_____	_____	_____	_____	_____
2nd _____	_____	_____	_____	_____	_____
3rd _____	_____	_____	_____	_____	_____
4th _____	_____	_____	_____	_____	_____
5th _____	_____	_____	_____	_____	_____

8. The size, price, quantity, and frequency of any fish purchases are closely tied to product form. For the two highest volume walleye product forms purchased that you listed as 1st and 2nd in the previous questions, please fill in the corresponding size, price, and quantity and frequency of delivery for 1996 purchases.

**Highest volume walleye product form purchased**

Delivery Schedule (write in total pounds for most common delivery schedule)

Average Price Paid July 1996 \$ \_\_\_\_\_/lb.

Size \_\_\_\_\_ oz. or lb. \_\_\_\_\_ lbs. every 3-4 days \_\_\_\_\_ lbs. every week \_\_\_\_\_ lbs. every month \_\_\_\_\_ lbs. Other \_\_\_\_\_ applies)

**Second highest volume walleye product form purchased**

Delivery Schedule (write in total pounds for most common delivery schedule)

Average Price Paid July 1996 \$ \_\_\_\_\_/lb.

Size \_\_\_\_\_ oz. or lb. \_\_\_\_\_ lbs. every 3-4 days \_\_\_\_\_ lbs. every week \_\_\_\_\_ lbs. every month \_\_\_\_\_ lbs. Other \_\_\_\_\_ applies)

9. What product forms of walleye do you sell? From the coded list of product forms on the opposite page, please write in the code letters for your five best-selling walleye product forms and indicate the most popular size of each product form. Then, write in the percentage that each product form (all sizes) makes up of your total walleye sales.

Code Letter of Best-Selling Product Form	Most Popular Size	Percent of Total Walleye Sales
1st _____	_____ oz	_____ %
2nd _____	_____ oz	_____ %
3rd _____	_____ oz	_____ %
4th _____	_____ oz	_____ %
5th _____	_____ oz	_____ %
Other _____	_____	_____ %
<b>Total</b>	<b>100 %</b>	

### III. Purchases and Sales of Yellow (Lake) Perch

1. Did you purchase yellow perch in 1996?
  - Yes (Skip to Question #3)
  - No
  
2. If you did not purchase yellow perch in 1996, please indicate the reasons. (Check all that apply, then please return the survey)
  - No/low customer demand
  - Too expensive
  - Not available
  - Available, but supply inconsistent
  - Available, but quality inconsistent
  - Other \_\_\_\_\_
  
3. Rank the top four months in which wholesale price you pay for yellow perch is highest. (Rank the top 4: 1=highest price, 2=2nd highest price, etc.)
 

	JAN	MAY	SEPT
_____	_____	_____	_____
_____	FEB	JUNE	OCT
_____	_____	_____	_____
_____	MAR	JULY	NOV
_____	_____	_____	_____
_____	APRIL	AUG	DEC
_____	_____	_____	_____
  
4. Rank the top four months in which demand for yellow perch is highest. (Rank the top 4: 1=highest demand, 2=2nd highest demand, etc.)
 

	JAN	MAY	SEPT
_____	_____	_____	_____
_____	FEB	JUNE	OCT
_____	_____	_____	_____
_____	MAR	JULY	NOV
_____	_____	_____	_____
_____	APRIL	AUG	DEC
_____	_____	_____	_____
  
5. Does your firm typically handle yellow perch? (Check only one)
  - Occasionally
  - Lenten Season only
  - Summer months only
  - Commercial fishing season only (about April - November)
  - Year around
  - Other \_\_\_\_\_

\*\*\*\*\*  
 Code Numbers for Firm/Customer/Supplier Types  
 1. Seafood Wholesalers  
 2. Grocery Wholesalers /Aquaculture  
 3. Foodservice Distributors  
 4. Brokers  
 5. Importer/exporters  
 6. Processors  
 \*\*\*\*\*  
 7. Fish Farmers  
 8. Commercial Fishermen  
 9. Tribal Fishermen  
 10. Restaurants  
 11. Supermarkets  
 \*\*\*\*\*  
 12. Seafood Specialty Retailers  
 13. Final Consumers  
 14. Other Foodservice  
 15. Other  
 \*\*\*\*\*

10. What customer types buy your best-selling walleye product forms? A coded list of customer types is located above. For each of the five best-selling walleye product forms you indicated in the previous question, please list the code numbers of the customer types that purchase the most of each product form. (One code per blank)
 

Best Selling Walleye Product Forms	Code Numbers for.....
Walleye Product Forms	Highest Volume Customer Type      2nd Highest Volume Customer Type
1st _____	_____
2nd _____	_____
3rd _____	_____
4th _____	_____
5th _____	_____
  
11. How much walleye did you purchase during an average week or month during the summer of 1996?
 

Or

Pounds weekly \_\_\_\_\_

Pounds monthly \_\_\_\_\_
  
12. Do you purchase farm-raised walleye? (Check only one)
  - Yes, infrequently
  - Yes, regularly
  - No, but I am interested
  - No, and I am not interested
  - Not sure
  
13. How much walleye do you think you might purchase weekly or monthly during the summer if aquaculture increased supplies enough that you could buy all you wanted at fairly competitive prices?
 

Pounds weekly \_\_\_\_\_

Or

Pounds monthly \_\_\_\_\_

Code Letters for Yellow Perch Product Forms

- A. Fresh whole/round
- B. Fresh fillet
- C. Fresh other (specify) \_\_\_\_\_
- D. Frozen whole/round
- E. Frozen fillet
- F. Frozen other (specify) \_\_\_\_\_

- Code Numbers for Firm/Customer/Supplier Types
- 1. Seafood Wholesalers
  - 2. Grocery Wholesalers /Aquaculture
  - 3. Foodservice Distributors
  - 4. Brokers
  - 5. Importer/exporters
  - 6. Processors
  - 7. Fish Farmers
  - 8. Commercial Fishermen
  - 9. Tribal Fishermen
  - 10. Restaurants
  - 11. Supermarkets
  - 12. Seafood Specialty Retailers
  - 13. Final Consumers
  - 14. Other Foodservice
  - 15. Other

6. What product forms of yellow perch do you purchase? From the coded list above, please write in the code letters for the top five yellow perch product forms in terms of volume of purchases. (Use only one code number per line.) Then, write in the percentage that each product form makes up of your total yellow perch purchases.

Code Letters of Highest Volume Product Forms	Percent of Total Yellow Perch Purchases
1st _____	_____ %
2nd _____	_____ %
3rd _____	_____ %
4th _____	_____ %
5th _____	_____ %
Other _____	_____ %
<b>Total</b>	<b>100%</b>

7. What types of firms supply you with yellow perch? A coded list of supplier types is listed above. For each of the top five yellow perch product forms you purchase, as indicated in the previous question, please list the code numbers of the supplier types that sell you the most of each product form. (One code per blank)

Highest Volume Yellow Perch Product Forms	Code Numbers for	
	Highest Volume Supplier Type	2nd Highest Volume Supplier Type
1st _____	_____	_____
2nd _____	_____	_____
3rd _____	_____	_____
4th _____	_____	_____
5th _____	_____	_____

8. The size, price, quantity, and frequency of any fish purchases are closely tied to product form. For the two highest volume yellow perch product forms purchased that you listed as 1st and 2nd in the previous questions, please fill in the corresponding size, price, and quantity and frequency of delivery for 1996 purchases.

**Highest volume yellow perch product form purchased**

Delivery Schedule (write in total pounds for most common delivery schedule)

Size \_\_\_\_\_ oz.      Average Price Paid July 1996 \$ \_\_\_\_\_/lb.

\_\_\_\_\_ lbs. every 3-4 days

\_\_\_\_\_ lbs. every week

\_\_\_\_\_ lbs. every month

\_\_\_\_\_ lbs. Other \_\_\_\_\_

**Second highest volume yellow perch product form purchased**

Delivery Schedule (write in total pounds for most common delivery schedule)

Size \_\_\_\_\_ oz.      Average Price Paid July 1996 \$ \_\_\_\_\_/lb.

\_\_\_\_\_ lbs. every 3-4 days

\_\_\_\_\_ lbs. every week

\_\_\_\_\_ lbs. every month

\_\_\_\_\_ lbs. Other \_\_\_\_\_

9. What product forms of yellow perch do you sell? From the coded list of product forms on the opposite page, please write in the code letters for your five best-selling yellow perch product forms and indicate the most popular size of each product form. Then, write in the percentage that each product form (all sizes) makes up of your total yellow perch sales.

Code Letter of Best-Selling Product Forms	Most Popular Size	Percent of Total Yellow Perch Sales
1st _____	_____ oz	_____ %
2nd _____	_____ oz	_____ %
3rd _____	_____ oz	_____ %
4th _____	_____ oz	_____ %
5th _____	_____ oz	_____ %
Other _____	_____	_____ %
<b>Total</b>	<b>Total</b>	<b>100%</b>

If you have any additional comments about the marketing of fish and seafood, or anything else related to this survey, we would appreciate them.

Comments:

- \*\*\*\*\*  
**Code Numbers for Firm/Customer/Supplier Types**  
 1. Seafood Wholesalers  
 2. Grocery Wholesalers /Aquaculture Retailers  
 3. Foodservice Distributors  
 4. Brokers  
 5. Importer/exporters  
 6. Processors  
 7. Fish Farmers  
 8. Commercial Fishermen  
 9. Tribal Fishermen  
 10. Restaurants  
 11. Supermarkets  
 12. Seafood Specialty  
 13. Final Consumers  
 14. Other Foodservice  
 15. Other  
 \*\*\*\*\*

10. What customer types buy your best-selling yellow perch product forms? A coded list of customer types is located above. For each of the five best-selling yellow perch product you indicated in the previous question, please list the codes of the customer types that purchase the most of each product form. (One code per blank)

Best Selling Yellow Perch Product Forms	----- Code Numbers for----- Highest Volume Customer Type	2nd Highest Volume Customer Type
1st	_____	_____
2nd	_____	_____
3rd	_____	_____
4th	_____	_____
5th	_____	_____

11. How much yellow perch did you purchase during an average week or month during the summer of 1996?

Pounds weekly \_\_\_\_\_  
 Or Pounds monthly \_\_\_\_\_

12. Do you purchase farm-raised yellow perch? (Check only one)

- Yes, infrequently
- Yes, regularly
- No, but I am interested
- No, and I am not interested
- Not sure

13. How much yellow perch do you think you might purchase weekly or monthly during the summer if aquaculture increased supplies enough that you could buy all you wanted at prices lower than recent years but still somewhat higher than prices for other species?

Pounds weekly \_\_\_\_\_  
 Or Pounds monthly \_\_\_\_\_

*Thank You  
 for Your Time and Cooperation*



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Series Editor: Joseph E. Morris, Associate Director,  
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Design by A & R Design

*Originally published by Iowa State University, Ames, Iowa*