

RUTGERS COOPERATIVE EXTENSION  
NEW JERSEY AGRICULTURAL EXPERIMENT STATION

---

CIRCULATING COPY

LOAN COPY ONLY

# Product Attributes Affecting Cultured Hard Clam Purchase Decisions

Nona R. Henderson  
Seafood Marketing Extension Specialist

Department of Extension Specialists  
Rutgers Cooperative Extension  
New Jersey Agricultural Experiment Station  
and  
Department of Agricultural Economics and Marketing  
Cook College  
Rutgers, The State University of New Jersey

New Jersey  
**SEA GRANT**



FISHERIES  
AND  
AQUACULTURE  
TECHNOLOGY  
EXTENSION  
CENTER

January 1994

NJSG-94-290

# Acknowledgements

This work is the result of research funded in part by: the Northeast Regional Aquaculture Center through grant number 91-38500-5908 from the Cooperative State Research Service of the United States Department of Agriculture under the project "Alternative Marketing Options to Improve the Profitability of Northeast Aquaculture"; the Fisheries & Aquaculture Technology Extension Center under its University/Industry Partnership Program through a grant from the New Jersey Commission on Science and Technology; NOAA, Office of Sea Grant, Department of Commerce, under grant number NA89AA-D-SG057, (Project number A/S-1); Ocean County Department of Planning; and Atlantic County Department of Regional Planning & Development. Cooperating agencies are: Rutgers Cooperative Extension; New Jersey Agricultural Experiment Station; Rutgers, the State University of New Jersey; United States Department of Commerce; NOAA Sea Grant College Program; United States Department of Agriculture; New Jersey Marine Sciences Consortium; Atlantic County Board of Chosen Freeholders; and Ocean County Board of Chosen Freeholders. The views expressed herein are those of the author and do not necessarily reflect the views of NOAA or any of its subagencies, or those of the other funding agencies. U.S. government is authorized to produce and distribute reprints for governmental purpose not withstanding any copyright notation that may appear herein NJSG-94-290.

Gef Flimlin, Marine Agent, New Jersey Sea Grant

Marine Advisory Service, assisted in the development and distribution of the mail survey utilized in this study, and served as liaison with the New Jersey industry cooperators and county funding agencies. The cooperation of five New Jersey cultured hard clam producers: George Mathis, Jr., Mathis and Mathis Enterprises, Egg Harbor; William Barnish, Brigantine; John Schriever, Bayfarm, West Creek; Peter McCarthy, Manahawkin; and Richard Crema, Oceanville, who provided input to the survey design, and of the sixty-seven hard clam buyers who participated in this survey (see Appendix I) is gratefully acknowledged. Paul Brown, Jr., Umer Barry Publications, Inc. of Toms River, NJ assisted in the distribution of the survey. Shyam Upadhyaya and Arbindra Rimal, graduate students in the Department of Agricultural Economics and Marketing, Cook College, Rutgers University assisted in computer entry of the survey data, and Phil Wisneski prepared the manuscript for publication.

Manuscript review by: Paul Scholz, Director, South Carolina Aquaculture and Marine Programs International; Bill Brockhouse, Agriculture Economist, Agricultural Cooperative Service, U.S. Department of Commerce; Walter Canzonier, President, New Jersey Aquaculture Association; John Kraeuter, Associate Director, Haskin Shellfish Laboratory; Dan Strombom, Agricultural and Resource Management Agent, Rutgers Cooperative Extension of Cape May County; and Gef Flimlin, Marine Agent, New Jersey Sea Grant Marine Advisory Service was invaluable.

**RUTGERS COOPERATIVE EXTENSION  
N.J. AGRICULTURAL EXPERIMENT STATION  
RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY  
NEW BRUNSWICK**

Distributed in cooperation with U.S. Department of Agriculture in furtherance of the Acts of Congress of May 8 and June 30, 1914. Cooperative Extension work in agriculture, home economics, and 4-H. Zane R. Helsel, director of Extension. Rutgers Cooperative Extension provides information and educational services to all people without regard to sex, race, color, national origin, disability or handicap, or age. Rutgers Cooperative Extension is an Equal Opportunity Employer.

# Product Attributes Affecting Cultured Hard Clam Purchase Decisions

## Introduction

The culture of hard clams, *Mercenaria mercenaria*, is a significant part of the Northeast aquaculture industry. In 1992, the farm gate value of cultured hard clam production in the Northeast region was valued at \$15,553,000. Cultured hard clams contributed 11% of the total regional aquaculture production valued at \$146,409,000 (Bush and Anderson, 1993).

Expansion and diversification of markets can improve the profitability of this industry at current production levels as well as foster production expansion. Suppliers of cultured hard clams face a highly competitive situation. The numerous hatcheries and fishermen engaging in cultured hard clam growout within each state face competition from one another and from clammers who harvest wild-caught hard clams. In addition, suppliers of both cultured and wild-caught hard clams in states along the Eastern seaboard from Maine to Florida vie for access to the important consumer markets of the Northeast and Mid-Atlantic.

A key to improving the competitive strength of aquaculturists and expanding markets for cultured clams is product differentiation. This study identifies important product attributes by which cultured hard clam suppliers can differentiate their product. A survey of hard clam buyers in New England, the Mid-Atlantic, the South Atlantic and the Mid-West was conducted in order to characterize weekly demand for hard clams, the degree of buyer differentiation of cultured versus wild-harvest product, and the relative importance of attributes which affect seafood buyer purchase decisions. Another objec-

tive of the survey was to develop specific trade leads for New Jersey producers of cultured hard clams.

## Methods

Information regarding company location, functions, sales territory, and annual sales was obtained from Who's Who in the Fish Industry 1992 (Brown, 1991). A survey of hard clam buyers was developed to characterize demand for hard clams, the level of market differentiation of cultured versus wild product, and factors which affect purchase decisions.

Questions related to buyer demand included levels of weekly hard clam purchases, whether cultured hard clams are currently purchased, and interest in being contacted by New Jersey suppliers of cultured product. The level of weekly hard clam purchases was requested by four size categories: littleneck, topneck, cherrystone and chowder. Most weekly purchases were reported in count (number of clams). All hard clam purchases reported in bushels by large buyers were converted to count using a count provided by the buyer in a followup telephone interview. Conversion to count for small buyers was made assuming 400 per bushel/bag for littlenecks, 250 for topnecks, 175 for cherrystones, and 100 for chowders. However, these numbers can change from dealer to dealer.

To determine the level of market differentiation of cultured versus wild product, buyers were asked how much more they are willing to pay for a cultured versus wild hard clam and whether their customers currently pay more for cultured product. The survey also examined the relative importance of

various factors in buyer purchase decisions. Five factors were identified: meat quality (free of sand, mud, & shell bits, etc.); shell appearance (size uniformity, cleanliness, etc.), price, year-round availability, and consumer perceptions of product safety. Buyers were offered the opportunity to suggest additional factors. The factors were rated on a five-point scale from 1 = most important to 5 = least important. Buyers also were asked the minimum shelf life expected for hard clams, and the terms on which they pay suppliers.

The survey was reviewed by five New Jersey cultured hard clam producers for usefulness, and mailed to 668 clam buyers in the Mid-Atlantic, New England, South Atlantic, and Mid-West regions. The mailing was conducted by Uner Barry Publications, Inc. and utilized an established database of firms listed in its publication, *Who's Who in the Fish Industry 1992* (Brown, 1991). The database proved to be current; only 7 firms surveyed were out of business. The survey revealed that a portion of the 668 clam buyers in the database do not handle hard clams although they do handle other types of clams (e.g., ocean quahog, surf clams, soft-shelled clams, etc.). Assuming that the percentage of firms which do not handle hard clams in the total database is comparable to that of survey respondents, the number of hard clam buyers in the four regions is estimated at 565.

The first mailing of the survey took place in mid-August 1992 using a self-mailer format comprised of two panels. One panel contained an explanation of project sponsors and survey purpose. Anonymity was not promised to survey participants. The second panel contained the survey, return mail information, as well as the buyer's mail label which enabled firm-level tracking of responses. A followup postcard was mailed two weeks later. A third mailing of the survey as a certified letter two weeks later was originally planned. Previous research indicates that such a mailing can significantly increase the response rate (Dillman, 1978). However, the third mailing was canceled due to inadequacy of budgeted funds to cover the large number of non-responsive buyers. Returned surveys which did not report whether the buyer currently purchases farm-raised hard clams and the amount of hard clams currently purchased were eliminated from consideration.

## Results and Discussion

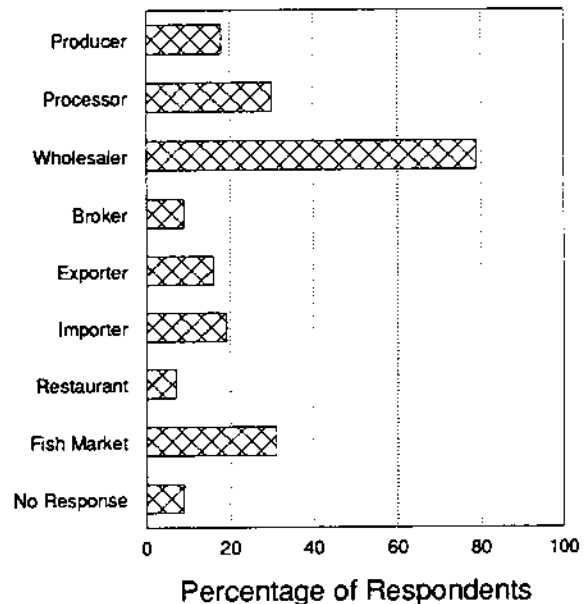
### Response Rate and Respondent Characteristics

A total of 67 seafood buyers returned usable surveys. Assuming a population of 565 buyers, the response rate was 12%.

The vast majority of buyers surveyed are in close proximity to Northeast cultured hard clam producers. Forty-eight percent of clam buyers surveyed are located in the Mid-Atlantic (New Jersey, New York, Pennsylvania, Maryland, and District of Columbia); 30% in New England (Connecticut, Rhode Island, Massachusetts, Maine, and Vermont); 12% in the Mid-West (Illinois, Indiana, Iowa, Kentucky, Michigan, Wisconsin, and Ohio); and 7% in the South Atlantic (Virginia, North Carolina, and South Carolina).

Information about company function is available for 81% of the clam buyers (Figure 1). The vast majority of all firms, 79%, are wholesalers, the primary market for cultured hard clam producers.

Figure 1 - Functions of Hard Clam Buyers Surveyed



Who's Who in the Fish Industry 1992

**Table 1. Number of Hard Clam Buyers by Company Function and Region**

	Mid-Atlantic	New England	Midwest	SouthAtlantic	Total
Producer	4	6	1	1	12
Processor	6	10	2	2	20
Wholesaler	30	13	7	3	53
Broker	1	3	1	1	6
Exporter	6	4	1	0	11
Importer	5	5	2	1	13
Restaurant	1	1	2	1	5
Fish Market	12	4	3	2	21
No Response	5	1	0	0	6

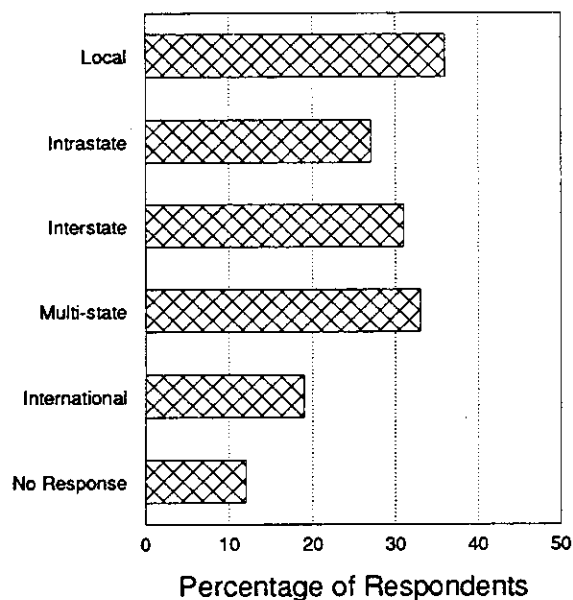
The total for all categories exceeds 100% because many companies have more than one function. The number of hard clam buyers surveyed by company function and region is provided in Table 1.

Information about the sales territory is available for 88% of the buyers surveyed (Figure 2). Approximately one-third have sales territories in each of four categories: local, intrastate (widely within state), interstate, and multi-state. An additional 19 percent have international sales. Again, the total for all

categories exceeds 100% due to the fact that many companies report more than one sales territory.

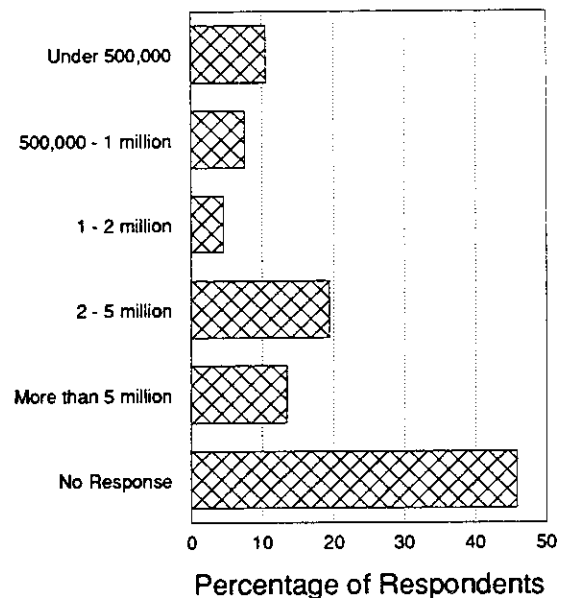
Annual dollar sales are available for 55% of the buyers surveyed (Figure 3). The buyers vary in size. About 35% of all buyers surveyed have annual sales of \$2 million or more. It should be noted, however, that many of the companies have multiple functions, the annual sales is a total across all functions, and hard clams may not be a significant percentage of total company sales.

**Figure 2 - Sales Territory of Hard Clam Buyers Surveyed**



Who's Who in the Fish Industry 1992

**Figure 3 - Annual Dollar Sales of Hard Clam Buyers Surveyed**



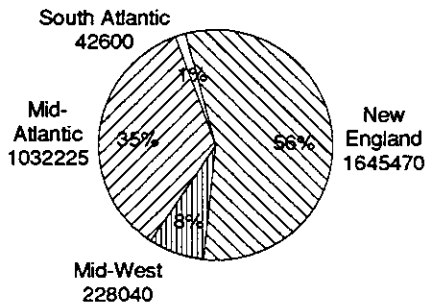
Who's Who in the Fish Industry 1992

## Level of Buyer Demand

The total weekly hard clam orders of the 67 buyers, assuming a 400 count for littlenecks, 250 count for topnecks, 175 count for cherrystones, and 100 count for chowders to convert any orders reported in bushels, is 2.9 million clams. This estimate is likely to be conservative. New Jersey suppliers report that counts of 700 for littlenecks, 500 for topnecks, 250 for cherrystones, and 100 to 200 for chowders are commonly expected by wholesalers from producers. Using these counts to convert any orders reported in bushels, the total weekly hard clam orders of the 67 buyers is nearly 4 million clams.

Of the total weekly hard clam orders, 33% are placed by Mid-Atlantic buyers and 56% by New England buyers (Figure 4). The regional distribution of hard clam buyers and weekly hard clam orders is given in Figure 5. The average weekly orders of New England buyers are larger than in any other region, including the Mid-Atlantic.

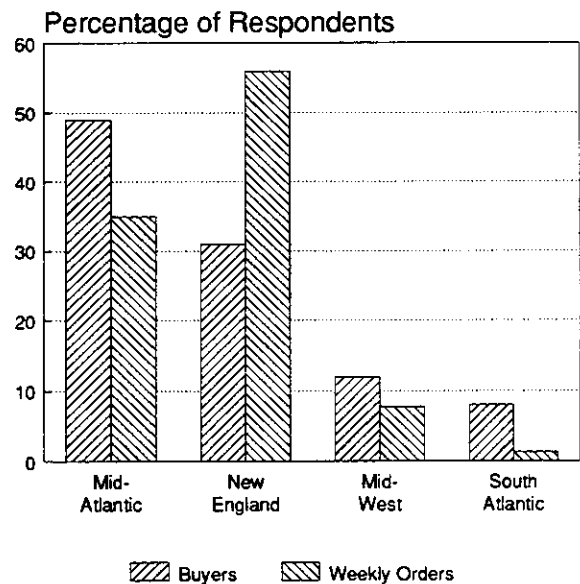
Figure 4 - Geographic Distribution of Weekly Hard Clam Orders (number of clams)



67 respondents

Weekly hard clam orders are summarized by size in Table 2; 44% of the orders are littlenecks, 14% are topnecks, 6% are cherrystones, 5% are chowders, and 31% are undifferentiated. Eighty-five percent (57) of buyers purchase littleneck clams. Their weekly purchases of littlenecks range from 150 to 400,000 clams, and average about 23,000 clams. About half of the buyers purchase each of the other three size clams. Weekly purchases of topnecks range from 100 to 100,000 clams, and average about 12,000 clams. Weekly purchases of cherrystones range from 120 to 52,500 clams, and average about

Figure 5 - Regional Distribution of Hard Clam Buyers & Orders



67 respondents

Table 2. Number of Buyers, Range of Weekly Orders, Average Weekly Order, and Total Weekly Orders by Size of Hard Clam

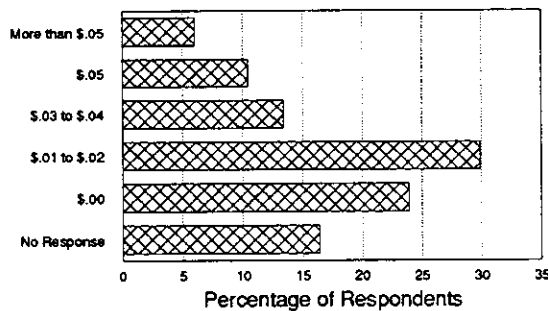
Size of Hard Clam	Number of Buyers	Range of Weekly Orders	Average Weekly Order	Total Weekly Orders
Littlenecks	57	150 - 400,000	22,718	1,294,900
Topnecks	35	100 - 100,000	11,976	419,180
Cherrystones	37	120 - 52,500	5,175	191,485
Chowders	37	120 - 20,000	3,858	142,770
Undifferentiated	2	150,000 - 750,000	450,000	900,000

5,000 clams. Weekly purchases of chowders range from 120 to 20,000 clams, and average 4,000 clams.

Of the 67 buyers, only 34% currently buy farm-raised hard clams. Additional buyers may be buying farm-raised hard clams but may not be aware that they are receiving cultured product because cultured clams often are not differentiated in the marketplace by shellfish suppliers. About the same percentage (33%) report that their customers currently pay more for cultured hard clams. The buyers who are aware that their are obtaining cultured clams apparently are differentiating cultured product with their customers and obtaining a premium price.

There also appears to be a significant opportunity to expand markets for cultured hard clams; 84% of buyers are interested in being contacted by produc-

Figure 6 - How much more will you pay for a cultured hard clam?



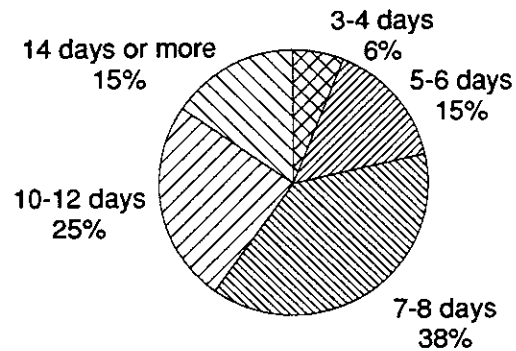
67 respondents

ers of cultured hard clams. Buyers were asked to indicate the maximum additional amount they are willing to pay for a cultured versus wild clam. Of the 67 survey respondents, 16% did not answer the question and 24% would not pay any more. However, 60% indicated that they would pay more for cultured hard clams: 30% would pay \$.01 to \$.02 more, 13% would pay \$.03 to \$.04 more, and 10% would pay \$.05 more (Figure 6). An additional 6% reported that they would pay \$.06 more per clam for a cultured product.

### Factors Affecting Purchase Decisions

The minimum shelflife which the buyers expect for hard clams varies (Figure 7). Twenty-one percent expect 6 or fewer days, the majority expect 7 to 12

Figure 7 - Minimum Shelflife Expected for Hard Clams

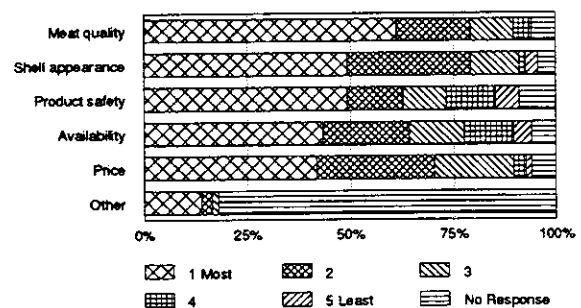


65 respondents

days, and fifteen percent expect 14 or more days. These shelflife expectations are correlated with company function; wholesaler/distributors tend to demand 7 or more days, while restaurants and fish markets tend to require 6 or fewer days.

Buyer responses related to the importance of factors affecting hard clam purchase decisions, on a five-point scale from *most important* to *least important*, are summarized in Figure 8. Sixty-one percent of buyers report that meat quality is *most important*. Shell appearance, year-round availability, and price are ranked *most important* by 49%, 43%, and 42% of the buyers, respectively. Eighty percent of buyers report that both meat quality and shell appearance are either *most important* or *second most important* factors affecting their purchase decisions. Other factors considered important by some buyers are shelflife/freshness, bed codes/source, delivery schedules/reliability, and accurate count.

Figure 8 - Factors Affecting Hard Clam Purchase Decisions



67 respondents

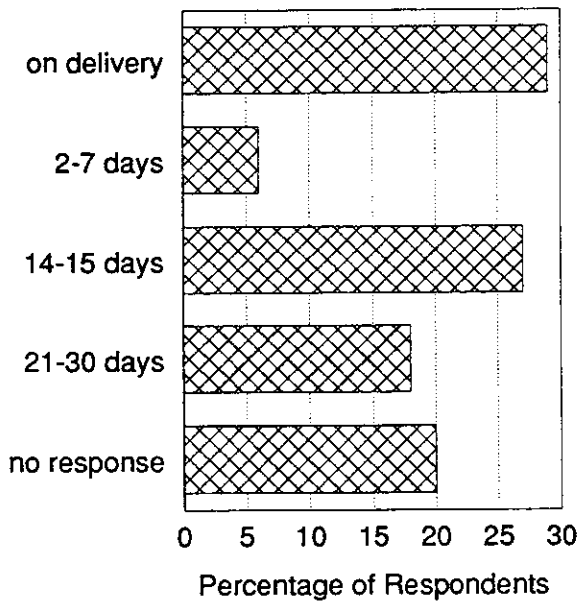
## Payment Terms

From the supplier perspective, payment terms are important considerations in market transactions. Rapid payment terms are preferable because of the positive impact on cash available to meet operating expenses. Payment terms are available for eighty percent of survey respondents. Twenty-nine percent pay on delivery and six percent pay within 2-7 days. Twenty-seven percent pay within 14-15 days, and eighteen percent pay within 21-30 days (Figure 9).

## Conclusions

Results indicate an opportunity to differentiate cultured hard clams in the market place and to obtain a premium price if key product attributes are

Figure 9 - On what terms do you pay suppliers?



67 respondents

satisfied. The survey results indicate high buyer interest in New Jersey cultured hard clams. Of the 67 buyers, one-third currently buy farm-raised hard clams and have customers who pay more for cultured hard clams. Eighty percent are interested in being contacted by New Jersey hard clam suppliers. More than half indicate that they will pay from \$.01 to \$.05 more for cultured product. More buyers rank meat quality and shell appearance as *most important* than they do price as factors affecting their purchase decisions of hard clams.

Because anonymity was not promised to survey participants, caution should be exercised in extrapolating survey results to the total hard clam buyer population. Standard survey practice, which promises anonymity of individual responses in the publication of results, is presumed to increase survey participation and accuracy of information provided. However, anonymity of individual responses would have eliminated the usefulness of the survey in providing specific trade leads to New Jersey cultured hard clam producers. Because 85% of the survey respondents indicated an interest in being contacted by cultured hard clam suppliers, these results provide insights into the buying preferences of hard clam buyers with expressed interest in alternative sources of cultured product.

## References

Bush, Michael J. and James L. Anderson. 1993. Northeast Region Aquaculture Industry Situation and Outlook Report. Northeast Regional Aquaculture Center.

Dillman, Don A., 1978. Mail and Telephone Surveys: The Total Design Method, John Wiley & Sons, New York, NY.

Brown, Paul B., Jr., 1991. Who's Who in the Fish Industry 1992, Umer Barry Publications, Inc., Toms River, NJ.

# Appendix I

## Hard Clam Buyers Who Participated in 1992 Rutgers Cultured Hard Clam Survey

### New England

American Mussel Harvesters, Peace Dale, RI  
Atlantis Seafoods, Monument Beach, MA  
Boston Fish Wholesale, Pittsfield, MA  
Cotuit Oyster Company, Cotuit, MA  
DiMare Seafoods Company, Revere, MA  
Fish's, Narragansett, RI  
Galilean Seafood Corporation, Bristol, RI  
Great Northern Products, Warwick, RI  
Greenwich Bay Clam, East Greenwich, RI  
Howard Malloves & Sons, Marion, MA  
King Neptune Seafood, Worcester, MA  
Maxwell's Mussels, Boxford, MA  
Michael Byrnes Seafood, South Boston, MA  
Mullaney's Harborside, Scituate, MA  
National P.O.P. Marketing Company, Waterbury, CT  
Phelps-Grace Company, East Providence, RI  
Plymouth Fish Market, Plymouth, MA  
Point Judith Shellfish Company, Boston, MA  
R&D Seafood, Woonsocket, RI  
Ray's Seafood Market, Burlington, VT  
Sebasco Wharf, Sebasco Estates, ME  
Westport Marine Specialties, Westport, MA

### Mid-Atlantic

Ahearn's Seafood Market, Waretown, NJ  
B.G. Lobster & Shrimp Company, New York, NY  
Bay Ridge Fish Market, Brooklyn, NY  
Black Tiger Company, Manasquan, NJ  
Cannon Seafoods, Washington, DC  
Cantanzaro Seafood, Cliffside Park, NJ  
Captain Bill's Fish Market, Glen Cove, NY  
Deep Sea Warwick, Warwick, NY  
Eastern Quahog, Saint James, NY  
Elmira Sea Food, Elmira, NY  
Filbert's Seafood, Reading, PA  
Flower's Shellfish Distributors, Bayville, NY  
Geneva Seafood & Fish Company, Geneva, NY

H&G Distributing, Bensalem, PA  
Jordan's Lobster Dock, Brooklyn, NY  
Helmrich's Seafood, Williamsport, PA  
Lobster Trap, East Rochester, NY  
Long Island Seafood, Bayshore, NY  
Montauk Seafood Company, New York, NY  
Montclair Seafoods, Montclair, NJ  
M&S Distributing Company, Harrisburg, PA  
M.Winters Seafoods, Jersey City, NJ  
New Jersey Shellfish, Westville, NJ  
Pisces Seafood Services, Toms River, NJ  
Poritzky's Meat Company, Peekskill, NY  
Ritter Foods, Elizabeth, NJ  
Shelco Seafood, Hollidaysburg, PA  
Twin County Grocers, Edison, NJ  
United Shellfish, Grasonville, MD  
US Food Products, Moonachie, NJ  
Wescoville Seafood, Wescoville, PA  
White Cap Seafoods, Islip, NY

### South Atlantic

Carolina Atlantic Seafood Enterprises, Morehead City, NC  
Crosby's Seafood, Charleston, SC  
H.M.Terry Company, Willis Wharf, VA  
Sea Island Seafood, Frogmore, SC  
Zora's Seafood Market, Wilmington, NC

### Midwest

Edwin Plitt & Sons, Chicago, IL  
Empire Fish Company, Milwaukee, WI  
Foremost Seafood, Kettering, OH  
J-Mark Seafood, Grandville, MI  
Mr.Dee's Seafood 'N' Things, Ann Arbor, MI  
RB Lester Company, Evansville, IN  
Specialties ET-R House of Seafood, Lexington, KY  
Waterfront Seafood Market, West Des Moines, IA