Estimating the Economic Impact for the Commercial Hard Clam Culture Industry on the Economy of Florida

Final Report

Funding Agency: Florida Department of Agriculture and Consumer Services, Division of Aquaculture

UF Project #: 00073946

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March 2009

Introduction

Commercially cultured hard clams have become the single most economically important food item grown by the Florida aquaculture industry. From humble beginnings in the late 1980's, the farm gate sales of cultured hard clams have equaled or exceeded the growth realized by the more established aquaculture sectors in Florida. This growth is linked to a strong demand for cultured molluscan shellfish, support by the relevant state agencies, and a continued supply of high quality coastal water within the regions where hard clams are cultured.

The sales of hard clams have generated significant economic activity within the primary culture regions. A study conducted by the University of Florida during 2000 found that the economic impact of the cultured hard clam industry on the economy of Florida was approximately $34 million (Philippakos, et al, 2001). Such information is of particular value as the industry attempts to convey to state resource managers and local decision-makers the importance of their industry to the well-being of local communities and the statewide economy Florida.

A follow-up study to the 2000 study was recently funded by the Division of Aquaculture, FDACS, at the request of the Statewide Clam Industry Task Force. The study was designed to replicate the original study by Philippakos, et al (2001) and assess how the economic impact of the industry had changed. The primary objective of the study was to measure the economic impact to the Florida economy generated by the commercial hard clam culture industry during 2007. This report provides an overview of the key study findings of this most recent economic impact assessment of the Florida commercial hard clam culture industry.

Methods

Survey Development and Implementation

The information necessary for the impact assessment was collected via a combined mail-out/telephone survey. The survey instrument was designed and administered by the staff of the Division of Aquaculture, Florida Department of Agricultural and Consumer Services (FDACS) in Tallahassee, Florida. The survey instrument was similar to that utilized by Philippakos, et al (2001) (See **Appendix A**). The survey was initially mailed to 52 certified shellfish dealers in Florida who purchased or sold during 2007 hard clams cultured in Florida. The survey solicited information on the regional location of the business(s), numbers of cultured hard clams

purchased and sold, the origin of their clam supplies, destination of clam sales (by region and type of purveyor), and prices received. The survey was initially mailed to each shellfish dealer, whom was asked to complete and return by a given deadline. However, a follow-up phone call by FDACS staff attempted to assist each dealer in completing their respective questionnaire, without asking the respondent to reveal confidential information. In some cases, the research team at the University of Florida contacted the respondent directly to assist in completing the questionnaire. Once completed, the questionnaires were mailed directly to the University of Florida, Food and Resource Economics Department (FRED) for assimilation into a master data set. The data were then utilized by the FRED research team as input into the IMPLAN model maintained by FRED. The IMPLAN model is used extensively for assessments of the economic impact on county, region, and statewide economies resulting from specific industry sector activity.

With regard to the current study, primary data and information collected via the survey were utilized by the IMPLAN model to generate an economic impact estimate relative to each of three defined regions of Florida, as well as on a statewide basis. The regions are delineated on a map provided in on the first page of the survey instrument, with a list of the counties contained within each region on the last page (See **Appendix A)**. Region 1 is the northwest/Big Bend area, Region 2 is southwest area, and Region 3 is the east coast. Philippakos, et al (2001) reported findings for all three regions separately. However, due to confidentiality concerns associated with fewer observations, the survey findings in associated with Regions 2 and 3 in the current report are combined (heretofore referred to as "Regions 2 & 3").

Economic Impact Assessment

This section describes the assumptions and methods of an economic impact analysis of clam grower and processor activities in Florida during 2007. The regional sources and destinations of revenues and expenditures are important in economic impact analysis because these factors determine whether or not business revenues generate multiplier effects for a regional economy. When locally produced goods and services are sold or exported outside the local or regional economy, "new" dollars enter that economy and "multiplier" effects (secondary economic activities), or impacts, result. These secondary impacts occur as directly affected businesses purchase locally produced inputs and as households of these business owners and

employees spend their earnings at other local businesses. If some of the necessary business inputs are not available locally, then dollars will leave the local economy when these items are imported, and the secondary impacts will be reduced. Economic impact analysis uses input-output models and detailed data on the regional economy to track and count these transactions.

The types of economic impacts estimated with the input-output models include output, value-added, labor income, other property income, indirect business taxes, and employment. Output impacts equal the value of intermediate inputs used by business plus total value-added. Value-added equals the sum of labor income, other property income, and indirect business taxes. These impacts can occur through direct, indirect, or induced effects. Direct effects are the revenues and jobs created directly by an industry or event. Indirect effects occur when clam growers and processors purchase inputs from local suppliers to carry out their business activities. Induced effects occur when the households of proprietors and employees of these businesses spend their earnings for personal consumption within the local economy. The total economic impacts of an event or activity equal the sum of these direct, indirect, and induced impacts. (See the Glossary at the end of the report for formal definitions.)

A survey of clam processors in Florida was conducted during the summer of 2008. Data on the types and location of clam sources and destination of clam sales in 2007 were obtained, in addition to the volume and unit prices associated with these sales. Unit prices were reported for clam sales to each type of buyer. Expenditures for initial clam purchases and sales revenues for the responding wholesale firms were computed from these prices and volumes within each region. Survey respondents were asked to identify their business location, and the location of their sources and outlets of clams, by one of three regions within the State of Florida, or outside the State (as described earlier in this report). The amounts and geographic sources of revenue were used in conjunction with an IMPLAN® (Minnesota IMPLAN Group) input-output model to estimate the economic impacts of the industry by region and for the State. Note that, due to confidentiality issues previously discussed, the findings are reported for Region 1 and for the combined Regions 2 & 3.

Survey Findings

Survey Sample

The survey questionnaire was sent out to all certified wholesale shellfish dealers in Florida who had purchased and/or distributed cultured hard clams during 2007. A total of 52 firms were identified through FDACS records. Each of these firms was mailed a questionnaire to complete and return. Of those firms, 42 returned surveys that were completed such that data could be utilized for the analysis. The overall rate of return for the survey was 80.8 percent. Of the 42 firms that completed surveys, 24 were located in Region 1, while 18 were from Regions 2 or 3. The distribution of numbers of clams sold and reported clam sales, by region, is given in Table 1.

Regional Distribution of Clam Sales by Growers and Processors

The regional distribution of clam sales by *growers to processors* is presented in Table 2. Clam sales by *processors to their buyers*, by region, are shown in Table 3. Total revenues for Florida clam *growers* (all regions) were estimated at $18,995,747 (Table 2). Grower revenues in Region 1 totaled $17,897,643. Grower revenues in Regions 2 & 3, totaled $1,098,104. Florida clam *processor* revenues totaled $26,730,012 for the State as a whole in 2007 (Table 3). This was comprised of $19,907,636 in revenues for Region 1 processors, and $6,822,377 in processor revenues in Regions 2 & 3.

Clam processors occasionally sell or purchase clams from other processors or wholesalers, which are later resold to retail or other consumer type outlets. These clams represent a source of "double counting", which needs to be accounted for in the analysis. In this case, the value of clams that was reported to have been acquired *from* other processors/wholesalers within the State was subtracted from the total revenues for each region and the State. Reported sales of clams *to* other processor/wholesalers were not deducted from regional or State totals, because most of these sales went to firms located outside the state of Florida, or they were assumed to be already included in the reported quantities that were acquired from other processors. The total number of clams reported to be acquired from other processor/wholesalers (i.e., double counted) was 15,499,260. Deducting these clams from the total number of clams handled results in a total net volume of 184,776,784 cultured hard clams for the State of Florida during 2007 (Table 3).

Also note the average implicit prices (per clam) reportedly received by processors for their sales, by market destination. Prices vary by market destination and dealer region. For example, the average price received by wholesale dealers in Region 1 for sales to Out-of-State buyers ($0.160) was higher than the price received by wholesale dealers in Regions 2 and 3 for their out of state sales ($0.131). The average implicit price (across all sales destinations) received by dealers in Region 1 was $0.150, compared to $0.132 for dealers in Regions 2 & 3. The average price received by all dealers to all sales destinations was $0.145.

Processor Sales by Type of Buyer

The survey solicited wholesale dealer sales by type of buyer and the regional destination of sales (Table 4). The majority of clam were sold by respondents in either region were to other wholesale dealers. Respondents in Regions 1 and Regions 2 & 3 sold 75,552,808 and 36,732,980 clams, respectively, to other wholesale dealers. The second most important buyer for either region was retailers, followed by restaurant buyers and final consumers. Of the total sales among all respondents, 60% were to other wholesale dealers; 32% to retail buyers; 5.6% to restaurant buyers; and 1.1% to final consumers. Also note that the highest average prices received by Region 1 dealers were from sales to restaurant buyers ($0.216 per clam), while the highest prices received by Region 2 & 3 dealers were from sales to consumers ($0.209 per clam). On average across all respondents, the highest prices were received from sales to consumers ($0.192), with the next highest prices received from sales to restaurants ($0.183).

Estimating the Economic Impacts of the Clam Industry

The economic impacts of the clam industry in Florida were estimated at the regional level for both clam growers and processors. State-level impacts were estimated by summing these regional impacts. Economic input-output models used to estimate these impacts and were constructed with the IMPLAN® software system using 2006 data for the United States, the State of Florida, and its individual counties. Although the IMPLAN software includes over 500 industry sectors to which expenditures or revenues can be assigned for estimating impacts, none were found that closely resemble clam production in Florida. As a result, the impacts for Florida clam production were estimated using a modified production function for IMPLAN sector 16

(Fishing) based on hard clam grower cost and earnings data published by Adams and van Blokland (1998) and Adams and Sturmer (2004).

IMPLAN sector number 71 (Seafood Product, Preparation and Packaging Sector) was used to represent the Florida clam processing industry, with some minor modifications. Clam processors spend a larger percent of their budget purchasing clams from growers (represented by the IMPLAN Fishing industry) than do U.S. seafood processors, on average. In IMPLAN, the share of processors' expenditures used to purchase clams was increased from approximately 32 percent, to 71 percent, on average, depending on the region within the State. Growers received, on average, $0.10 per clam in Region 1, and $0.11 per clam in Regions 2 & 3. The ratio of prices that processors buy and sell clams determines the proportion of their revenues used to buy clams since there is a one-to-one relationship in that specific production function. Since the economic impacts generated by clam growers was estimated separately, the proportion of total regional demand for clams supplied by the region itself (the regional purchase coefficient) was set to zero. This prevented the input-output model from counting the indirect effects of clam processor sales on clam growers (which would have resulted in double-counting clam grower impacts).

The results from the regional analysis of clam industry economic impacts are presented in Tables 5, 6, and 7. Economic impacts for Region 1, and Regions 2 & 3 combined, are shown in Tables 5 and 6 respectively. The combined regional impacts of all clam growers and processors in the State (representing the State-level impacts in this case) are presented in Table 7.

Region 1 Impacts - From revenues of $17.9 million (M), it is estimated that *clam growers* generated a total output impact of $35.2 M for Region 1 in 2007 (Table 5, top section). The Value-added impact from Region 1 grower activities was estimated at $21.3 M. This impact was composed predominately of $17.2 M in Labor Income. Other Property Income impacts totaled $3.1 M and Indirect Business Tax impacts totaled $0.97 M for Region 1. About three-fourths of the secondary (indirect and induced) impacts generated by clam growers in Region 1 are from induced effects. This is because growing clams is very labor and management intensive. This is also evident in the larger number of proprietor and employee jobs created by clam growing enterprises; 422 in total. These employment impacts include the number of full-time, part-time, and seasonal jobs.

For 2007, the total output impacts created by *clam processors* (independent of clam growers) for Region 1 were estimated to be $27.6 M (Table 5, middle section). The total impacts of processors are smaller than that of growers for several reasons. First, Region 1 grows more clams than it processes, exporting over 30 percent of its clams to Regions 2 & 3. Also, processing clams involves relatively less labor than growing clams. Money spent on labor is more likely to remain in the regional economy than expenditures on material inputs. Also, less labor results in a relatively smaller value-added component to these impacts. Value-added impacts for clam processors in Region 1 totaled to $7.6 M for 2007. Job or employment impacts from clam processing in Region 1 are estimated to have totaled 134 that year. About half of these jobs were generated directly by processing firms, and half resulted from indirect and induced effects.

The estimated total Output impact of clam *growers and processors* combined for Region 1 in 2007 is $44.9 M (Table 5, bottom section). This is about 2.25 times the industry's $19.9 M in direct output impact on the region. The total Value-Added impact (revenues minus the cost of intermediate inputs) for Region 1 growers and processors is estimated to equal $28.8 M. This value-added impact is composed of $23.0 M in Labor Income, $4.38 M in Other Property Income, and $1.5 M in Indirect Business Taxes. Approximately 556 jobs were created as a result of clam growing and processing operations in Region 1 in 2007. This is over 1.7 times the number of jobs estimated to be created directly by the clam industry for this region (Table 5). Clam growers are responsible for generating more of the industry's impact on Region 1 than processors. This is because growers export a significant quantity of their production outside the region, and because the growing operation involves more value-added activities than processing does.

Regions 2 & 3 Impacts - The total output impact generated by *clam growers* for Regions 2 & 3 in 2007 is estimated at $1.73 M (Table 6, top section). The Value-Added impact for Regions 2 & 3 is estimated to total $1.15 M. This value-added impact is composed of $0.98 M in Labor Income, $0.128 M in Other Property Income, and $0.039 M in Indirect Business Taxes. Twenty-one jobs are estimated to have been created as a result of clam growing in Regions 2 & 3 combined (Table 6).

The economic impacts of *clam processors* on Regions 2 & 3 are shown in Table 6 (middle section). Again, these processor impacts were estimated independent of local clam growers in order to prevent double-counting. Total Output impacts of clam processing in 2007 for Regions 2 & 3 are estimated at $7.45 M. Clam processing generated $1.5 M in value-added impacts for Regions 2 & 3 that year. This was comprised of $1.3 M in Labor Income, $0.13 M in Other Property Income, and $0.064 M in Indirect Business Taxes. In 2007, it is estimated that a total of 29 jobs were generated by clam processors in Regions 2 & 3.

The combined total Output impacts of clam *growers and processors* in Regions 2 & 3 are estimated at $8.08 M for 2007 (Table 6, bottom section). The direct output impacts of clam growing are included in that of clam processors, so the combined direct impact of both activities equals the processors' direct impact. Industry value-added impacts for Regions 2 & 3 totaled $2.66 M. This consisted of $2.3 M in Labor Income, $0.26 M in Other Property Type Income, and $0.103 M in Indirect Business Taxes. Altogether, a total of 50 jobs were created by clam grower and processing activities in Regions 2 & 3 for 2007. The importance of the clam industry in these regions was substantially smaller than Region 1 for two reasons. First, production and sales were lower, and second, a much larger proportion of what was produced or processed in Regions 2 & 3 was consumed locally. Thus, there were fewer "new" dollars brought in by the industry there to generate multiplier effects for that regional economy.

Statewide Impacts - The combined economic impacts of the *clam industry* on the State of Florida are presented in Table 7. These *state-wide* impacts were estimated by summing the regional results (section by section) given in Tables 5 and 6. This avoids any discrepancies in regional and state estimates due to differences in the economic model multipliers. Output impacts generated by clam growers in the State of Florida for 2007 are estimated to total $36.9 M (Table 7, top section). Clam growers generated a Value-Added impact of $22.4 M that year. This was comprised of $18.2 M in Labor Income, $3.2 M in Other Property Income, and $1.0 M in Indirect Business Taxes. An estimated 443 jobs were created as a result of clam growing activities in all regions of the State in 2007. Two-hundred and seventy of these jobs were generated directly by growing operations, with an addition 173 jobs created through the multiplier effects of export sales (Table 7).

For all regions of the State, clam processors generated a total output impact of over $35 M in 2007 (Table 7, middle section). Total value-added impacts resulting from clam processing are estimated at $9.1 M for the State that year. Nearly $7.1 M of this value-added was comprised of Labor income. Other Property Income was estimated at $1.4 M and Indirect Business Taxes generated by clam processors for the State were estimated at $0.59 M. An estimated total of 163 jobs were created by clam processors in the State during 2007. Ninety-two of these jobs were involved directly with clam processing, while 72 were generated indirectly through multiplier effects of export sales.

Combined economic impacts created by both clam growers and processors on all regions of the State of Florida are presented in the bottom section of Table 7. The combined total output impacts of Florida's Clam industry are estimated to equal nearly $53 M. This total was determined by adding the direct output impact of the clam processing industry to the sum of the indirect and induced impacts of both growing and processing industries. The total Value-Added impacts of growers and processors for the State of Florida in 2007 were estimated to equal $31.5 M. This was nearly 60 percent of the total output impact. Approximately 50 percent of this value-added impact was comprised of Labor Income ($25.3 M). The remaining value-added consisted of $4.6 M in Other Property Income and $1.6 M in Indirect Business Taxes. For all regions of the State, clam growing and processing industries are estimated to have generated 606 jobs in 2007 (Table 7, bottom section). It is important to note that over 40 percent of the output, value-added and employment impacts of the clam industry were generated from indirect and induced effects in 2007. These multiplier effects occur when product is sold outside the region or State and new dollars are brought into the regional economy.

Conclusions

This study serves as an update to a previous study concerning the 1999 hard clam production year (Philippakos, et al, 2001). That earlier study found that the economic impact to the Florida economy resulting from the commercial culture of hard clams was $34 M. This current study of the 2007 production year reveals that the economic impact to the Florida economy resulting from commercial hard clam culture has increased to approximately $52 M. Both values are in nominal dollars (not adjusted for inflation). Although the overall increase in these estimated economic impact values is due to changes in production levels, market prices,

monetary inflation rates, and other factors, the findings of this study again reveal the economic importance of the hard clam culture industry to the regional and statewide economies of Florida. The reader should further note that, with the exception of direct wholesale dealer sales to consumers, the economic impact estimates were only generated at the dealer sales level. In other words, the economic impacts associated with additional final consumer sales within the restaurant, retail seafood shops and other sectors where sales are made to the final consumer were not included. Of importance would be those in-Florida sales of hard clams that are made to final consumers who are *not* Florida residents. This would be an additional source of "new money", or economic impact. Given the large number of nonresidents that visit Florida and likely consume fresh seafood, this omission may be significant. However, data to capture these final sales are not readily available. Thus, the $53 M estimate should be considered a lower-bound estimate. Notwithstanding that omission, the study clearly shows the importance of the commercial hard clam culture industry as a generator of sales, incomes, taxes, jobs, and overall economic impact in Florida. If they haven't already, local, regional, and statewide decision-makers should take notice.

References

Adams, C. and P.J. van Blokland. 1998. "Economic and Financial Considerations Regarding the Small-Scale Commercial Culture of Hard Clams in the Cedar Key Area of Florida. Journal of Applied Aquaculture 8: 19-37.

Adams, C. and L. Sturmer. 2004, "Preliminary Financial Feasibility Analysis for a Two-Acre Hard Clam Culture Operation, Southwest Florida Area – January 2004" Unpublished Sea Grant Workshop Pamplet. IFAS, University of Florida. Gainesville, FL.

Minnesota IMPLAN Group (MIG). 2006. IMPLAN Pro, Economic Impact and Social Accounting Software, and Data, Stillwater, MN. http://www.implan.com.

Philippakos, E., C. Adams, A. Hodges, D. Mulkey, D. Comer, and L. Sturmer. 2001. "Economic Impact of the Florida Cultured Hard Clam Industry". SGR-123. Florida Sea Grant College Program. University of Florida. Gainesville, FL.

Glossary

Direct effects/impacts: Direct impacts, represent the revenues, value-added, income, or jobs that result directly from an economic activity within a regional economy.

Employment or Jobs: Represents the total numbers of wage and salaried employees as well as self-employed jobs. This includes full-time, part-time and seasonal workers measured in annual average jobs.

Indirect Business Taxes: Include sales, excise, and property taxes as well as fees and licenses paid by businesses during normal operations. It does not include taxes on profits or income.

Indirect effects/impacts: Indirect effects occur when businesses use revenues originating from outside the region, or study area, to purchase inputs (goods and services) from local suppliers. This secondary, or indirect business, generates additional revenues, income, jobs and taxes for the area economy.

Induced effects/impacts: Induced effects or impacts occur when new dollars, originating from outside the study area, are introduced into the local economy. Induced economic impacts occur as the households of business owners and employees spend their earnings from these enterprises to purchase consumer goods and services from other businesses within the region. This induced effect generates additional revenues, income, jobs and taxes for the area economy.

Input-Output Analysis: The use of input-output models to estimate how revenues or employment for one or more particular industries, businesses or activities in a regional economy impact other businesses and institutions in that region, and the regional as a whole.

Input-Output Models: A mathematical representation of economic activity within a defined region using inter-industry transaction tables or matrices where the outputs of various industries are used as inputs by those same industries and other industries as well.

Labor Income: All forms of employment compensation, including employee wages and salaries, and proprietor income or profits.

Local revenues/expenditures: Local revenues or spending represent simple transfers between individuals or businesses within a regional economy. These transactions do not generate economic spin-off or multiplier (indirect and induced) effects.

Margins: Represent the differences between retail, wholesale, distributor and producers prices.

Non-local revenues/expenditures: When outside or new revenues flow into a local economy either from the sale of locally produced goods and services to points outside the study area, or from expenditures by non-local visitors to the study area, additional economic repercussions occur through indirect and induced (multiplier) effects.

Other Property Type Income: Income in the form of rents, royalties, interest, dividends, and corporate profits.

Output: Revenues or sales associated with an industry or economic activity.

Total Impacts: The sum of direct, indirect and induced effects or economic impacts.

Value-added: Includes wages and salaries, interest, rent, profits, and indirect taxes paid by businesses.

Table 1. Number of Wholesale Firms Reporting Clams Sales (Volume and Value), by Region, within Discrete Ranges.

	Number of Clams Sold			Value of Clam Sales		
Region	**< 1 M**	**1 – 10 M**	**> 10 M**	**< $100K**	**$100K -$1 M**	**> $ 1 M**
Region 1	**11**	**9**	**4**	**11**	**5**	**2**
Regions 2 or 3	**11**	**8**	**5**	**9**	**7**	**2**
The numbers of clams sold and sales values are the initial responses provided by the wholesale dealer respondents. (K – 1,000; M – one million).						

Table 2. Clam Grower Sales to Processors (net of wholesaler supply), by Region of Source, with Regional Grower Revenue Market Shares.

		Processor Destination Region		
Grower Source Region	**Units**	**Region 1**	**Regions 2 & 3**	**Total Regions 1, 2 & 3**
Region 1	clams	132,921,975	41,868,233	174,790,208
	$s	$13,292,138	$4,605,506	$17,897,643
	% $s	99.96%	80.82%	94.22%
Regions 2 & 3	clams	48,546	9,938,630	9,987,176
	$s	$4,855	$1,093,249	$1,098,104
	% $s	0.04%	19.18%	5.78%
Total Region 1 and Regions 2 & 3	clams	132,970,521	51,806,863	184,777,384
	$s	$13,296,992	$5,698,755	$18,995,747
	% $s	100.00%	100.00%	100.00%

Table 3. Clam Processor Sales, Revenues, and Implicit Prices, by Processor Region and Destination (*Net of clams purchased from other clam processors/wholesalers*).

Clam Processor Region Location	Destination of Sales	Total Number of Clams Sold	Total Revenues from Sales	Average Implicit Price
Region 1	Within Region	2,765,910	$496,784	$0.180
	Between Regions	46,988,771	$6,103,903	$0.130
	In-State	49,754,681	$6,600,688	$0.133
	Out-of-State	83,215,840	$13,306,948	$0.160
	Everywhere	**132,970,521**	**$19,907,636**	**$0.150**
Regions 2 & 3	Within Region	21,071,923	$2,837,413	$0.135
	Between Regions	3,975,830	$485,552	$0.122
	In-State	25,047,753	$3,322,966	$0.133
	Out-of-State	26,759,110	$3,499,411	$0.131
	Everywhere	**51,806,863**	**$6,822,377**	**$0.132**
Regions 1 and Regions 2 & 3	Within Region	23,837,833	$3,334,198	$0.140
	Between Regions	50,964,601	$6,589,456	$0.129
	In-State	74,802,434	$9,923,653	$0.133
	Out-of-State	109,974,950	$16,806,359	$0.153
	Everywhere	**184,777,384**	**$26,730,012**	**$0.145**

Table 4. Clams Sales (number, value, and average implicit price) of Wholesale Dealers, by Buyer Type and Wholesale Dealer Region Location.

Buyer Type	Wholesale Dealer Location		Total
	Region 1	Regions 2 & 3	
Wholesaler			
# sold	75,552,808	36,732,980	112,285,788
$ sales value	$8,878,592	$4,896,240	$13,774,832
Average price	$0.118	$0.133	$0.123
Restaurant			
# sold	5,798,835	4,637124	10,435,959
$ sales value	$1,253,312	$655,860	$1,909,172
Average price	$0.216	$0.141	$0.183
Retailer			
# sold	50,416,117	9,533,579	59,949,696
$ sales value	$9,560,204	$1,081,813	$10,642,016
Average price	$0.190	$0.113	$0.178
Consumer			
# sold	1,202,762	903,180	2,105,942
$ sales value	$215,528	$188,463	$403,991
Average price	$0.180	$0.209	$0.192
Total Clams Sold	132,970,521	51,806,863	184,777,384
Total Sales Value	$19,907,636	$6,822,377	$26,730,012
Average Implicit Price (all buyers)	$0.150	$0.132	$0.145

Prices are those received by the wholesale dealer and represent the average reported across respondents. Sales information is provided by region of the wholesale dealer, not the regional location of the buyer.

Table 5. Economic Impacts of Clam Growers and Processors for Region 1 in the State of Florida, 2007.

Growers: Region 1 (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	17.898	4.103	13.210	35.211
Value Added, $ Millions	11.967	1.168	8.136	21.271
Labor Income, $ Millions	11.763	0.846	4.601	17.210
Other Property Income, $ Millions	0.171	0.162	2.757	3.091
Indirect Business Taxes, $ Millions	0.033	0.160	0.778	0.970
Jobs	254	45	123	422
Processors: Region 1 (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	19.908	3.184	4.505	27.597
Value Added, $ Millions	3.214	1.561	2.803	7.577
Labor Income, $ Millions	3.135	1.001	1.623	5.759
Other Property Income, $ Millions	0.000	0.372	0.922	1.293
Indirect Business Taxes, $ Millions	0.078	0.189	0.258	0.525
Jobs	68	23	43	134
Growers & Processors: Region 1 (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	19.908 [1]	7.287	17.715	44.910 [1]
Value Added, $ Millions	15.181	2.729	10.939	28.848
Labor Income, $ Millions	14.898	1.847	6.224	22.969
Other Property Income, $ Millions	0.171	0.534	3.679	4.385
Indirect Business Taxes, $ Millions	0.111	0.348	1.036	1.495
Jobs	323	67	166	556

[1] Processor direct output impact includes the grower direct output impact. The total output impacts of Grower and Processor industries combined (in the bottom section) equals the sum of the combined direct, indirect and induced effects.

Table 6. Economic Impacts of Clam Growers and Processors for Regions 2 & 3 in the State of Florida, 2007.

Growers: Regions 2 & 3 (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	1.098	0.123	0.504	1.726
Value Added, $ Millions	0.767	0.067	0.316	1.150
Labor Income, $ Millions	0.756	0.047	0.181	0.984
Other Property Income, $ Millions	0.010	0.013	0.105	0.128
Indirect Business Taxes, $ Millions	0.002	0.007	0.030	0.039
Jobs	16	1	5	21
Processors: Regions 2 & 3 (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	6.822	0.007	0.624	7.453
Value Added, $ Millions	1.110	0.004	0.391	1.505
Labor Income, $ Millions	1.083	0.002	0.225	1.311
Other Property Income, $ Millions	0.000	0.001	0.130	0.131
Indirect Business Taxes, $ Millions	0.027	0.000	0.037	0.064
Jobs	23	0	6	29
Growers & Processors: Regions 2 & 3 (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	6.822 [1]	0.130	1.128	8.080 [1]
Value Added, $ Millions	1.878	0.071	0.707	2.655
Labor Income, $ Millions	1.839	0.049	0.406	2.294
Other Property Income, $ Millions	0.010	0.014	0.235	0.259
Indirect Business Taxes, $ Millions	0.029	0.008	0.066	0.103
Jobs	39	1	10	50

[1] Processor direct output impact includes the grower direct output impact. The total output impacts of Grower and Processor industries combined (in the bottom section) equals the sum of the combined direct, indirect and induced effects.

Table 7. Economic Impacts of Clam Growers and Processors for Region 1 and Regions 2 & 3 in the State of Florida, 2007.

Growers: All Regions (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	18.996	4.227	13.714	36.936
Value Added, $ Millions	12.735	1.235	8.452	22.421
Labor Income, $ Millions	12.519	0.893	4.781	18.193
Other Property Income, $ Millions	0.181	0.175	2.863	3.219
Indirect Business Taxes, $ Millions	0.035	0.167	0.808	1.009
Jobs	270	45	128	443
Processors: All Regions (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	26.730	3.190	5.129	35.049
Value Added, $ Millions	4.324	1.564	3.194	9.083
Labor Income, $ Millions	4.219	1.003	1.848	7.070
Other Property Income, $ Millions	0.000	0.372	1.052	1.424
Indirect Business Taxes, $ Millions	0.105	0.189	0.294	0.588
Jobs	92	23	49	163
Growers & Processors: All Regions (Local & Non Local Sales)				
Impact Type/Effect	**Direct**	**Indirect**	**Induced**	**Total**
Output, $ Millions	26.730 [1]	7.417	18.843	52.990 [1]
Value Added, $ Millions	17.058	2.800	11.646	31.504
Labor Income, $ Millions	16.738	1.896	6.629	25.263
Other Property Income, $ Millions	0.181	0.548	3.915	4.643
Indirect Business Taxes,$ Millions	0.140	0.356	1.102	1.598
Jobs	362	68	176	606

[1] Processor direct output impact includes the grower direct output impact. The total output impacts of Grower and Processor industries combined (in the bottom section) equals the sum of the combined direct, indirect and induced effects.

Appendix A

Survey Instrument

The questionnaire utilized by the study was a modified version of that used in the Philippakos, et al (2001) study. The minor revisions were incorporated to accommodate more timely characteristics of the Florida hard clam culture industry.

CULTURED HARD CLAM MARKET CHANNEL ASSESSMENT FOR 2007

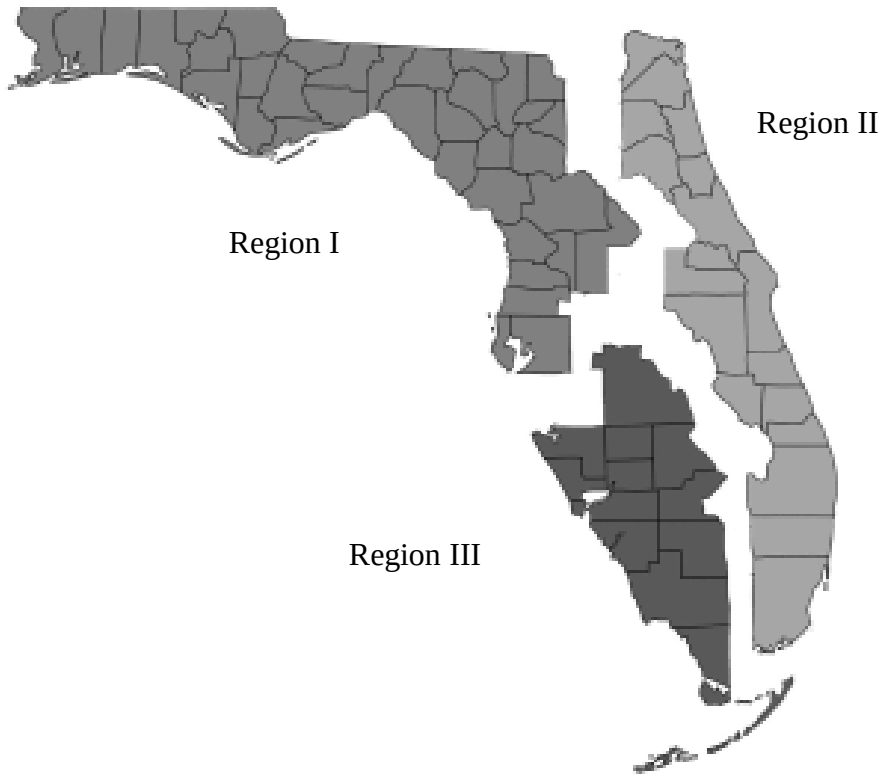
The primary purpose of this survey is to determine where Florida-grown cultured hard clams are sold, to whom, and for how much during 2007. PLEASE PROVIDE ESTIMATES.

A. LOCATION OF *CERTIFIED SHELLFISH DEALER*[1]-

1. Did your business have multiple certified shellfish processing plants during 2007?
Y_____ N_____

2. In what regions (**see map below**) were your *certified shellfish processing plant(s)* located during 2007? **I ____ II ____ III ____**

Florida Region Map



A list of counties in each region is provided at the end of this survey.

[1]A shellstock shipper, shucker-packer, repacker, or depuration processor who possesses a shellfish processing plant certification license from the Florida Department of Agriculture and Consumer Services.

If you operated multiple certified shellfish processing plants in 2007, please complete Sections B, C and D for each plant. You should have received a survey for each location. However, if you do combine your responses, please let us know.

Combined responses for multiple plant locations? Y_____ N_____

B. NUMBER AND SALES OF CULTURED CLAMS SOLD -

1. What was the total ***number*** (***estimate across all sizes***) of Florida-grown hard clams you *processed and sold* during 2007? _____ clams

2. What was the total ***sales value*** (***estimate across all sizes***) of Florida-grown hard clams you *processed and sold* during 2007? $ _____

C. ORIGIN OF CULTURED CLAM SUPPLY –

Consider THREE sources of clams ---> ***Your Lease(s)***
Other Growers
Wholesalers

1. Of the *total number* of clams you processed and sold in 2007, ***estimate*** how many were obtained from the following sources:

Your Lease(s) _____
Other Growers _____
Wholesalers _____

Note Total should add up to answer for question **B. 1.**

2. Of those clams obtained from **Your Lease(s)**, ***estimate*** what *percent* were grown on leases in each region?

I _____% **II** _____% **III** _____%

3. Of those clams obtained from **Other Growers**, ***estimate*** what *percent* were obtained from growers in each region?

I _____% **II** _____% **III** _____%

4. Of those clams obtained from **Wholesalers**, ***estimate*** what *percent* were obtained from wholesalers in each region?

I _____% **II** _____% **III** _____%

D. DESTINATION OF CULTURED CLAM SALES -
The following questions ask for volume and price information. Price may vary by size of clam, time of year, order quantity, etc. **Please provide only an *average* price (including all shipping costs) by type of buyer where possible.**

Consider four destinations of clams you sell --->
Inside your region
Outside your region ... but in Florida
Outside of Florida ... but in USA
Outside of USA

1. Of the *total number* of clams you processed and sold in 2007, ***estimate*** how many were sold to buyers in the following locations? Note Total should add up to the answer for Question **B.1.**

Inside your region _____

Outside your region ... but in Florida _____

Outside of Florida ... but in USA _____

Outside of USA _____

2. Of the clams sold **Inside your region**, who did you sell them to?

	%	Average Price per Clam
Other wholesalers	_____	_____
Restaurants / food service	_____	_____
Retail Seafood Shops	_____	_____
Direct to consumers	_____	_____

3. Of the clams sold **Outside of your region ... but in Florida**, who did you sell them to?

	%	Average Price per Clam
Other wholesalers	_____	_____
Restaurants / food service	_____	_____
Retail Seafood Shops	_____	_____
Direct to consumers	_____	_____

4. Of the clams sold **Outside of Florida** (*including* international sales), who did you sell them to?

	%	Average Price per Clam
Other wholesalers	_____	_____
Restaurants / food service	_____	_____
Retail Seafood Shops	_____	_____
Direct to consumers	_____	_____

List of Counties in Each Region

Region 1		Region 2	Region 3
Alachua	Lafayette	Brevard	Charlotte
Baker	Lake	Broward	Collier
Bay	Leon	Clay	Desoto
Bradford	Levy	Dade	Glades
Calhoun	Liberty	Duval	Hardee
Citrus	Madison	Flagler	Hendry
Columbia	Marion	Indian River	Highlands
Dixie	Okaloosa	Martin	Lee
Escambia	Pasco	Nassau	Manatee
Franklin	Pinellas	Okeechobee	Monroe
Gilchrist	Santa Rosa	Orange	Polk
Gladsen	Sumter	Osceola	Sarasota
Gulf	Suwannee	Palm Beach	
Hamilton	Taylor	Putnam	
Hernando	Union	Seminole	
Hillsborough	Wakulla	St. Johns	
Holmes	Walton	St. Lucie	
Jackson	Washington	Volusia	
Jefferson			