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**The Potential Economic Impacts on Virginia's Economy  
Of the Closure of One Crab Processing Plant**

**VIMS Marine Resource Report No. 2005-1**

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# **The Potential Economic Impacts on Virginia's Economy Of the Closure of One Crab Processing Plant**

## **Introduction:**

Graham and Rollins, a Virginia seafood processing company specializing in blue crab meat, has expressed concern about an inadequate supply of labor, which threatens the economic viability of the firm. Simply, without relatively low-cost, foreign labor, the firm cannot obtain enough labor for their operation. At the request of Mr. John Graham, an economic impact assessment was conducted on the potential economic impacts the closure of his company would have on the general economy of Virginia. The impact assessment focused on the potential short-term reductions in sales or output, income generated in the economy, and full-time employment.

## **Methodology:**

An input-output (I/O) model developed at the Virginia Institute of Marine Science by James Kirkley was used to estimate the potential impacts.<sup>1</sup> The model is based on year 2000 information available from IMPLAN, which is an "off-the-shelf" economic impact modeling program. IMPLAN, however, cannot be directly used to estimate economic impacts generated by commercial fishing, and thus, the model had to be customized or developed to reflect harvesting and processing activities associated with commercial fishing.

The use of I-O analysis has the major advantage of estimating the multiplier effect of fishing and processing activities. This effect estimates the economic activity derived from the series of transactions that occurs when fish are harvested, processed, and sold. As an example, harvesters' demands for fuel create additional demands for goods and services that are purchased by the fuel dealer from its suppliers. These suppliers in turn purchase other goods and services in the regional economy and so on. This cascading series of transactions is measured by I-O analysis in terms of employment, income, and output/sales. I-O analysis not only captures the magnitude of this multiplier effect, but can also identify and measure the contribution of the wide array of different industries or economic sectors involved in the creation of the multiplier effect.

An economic impact assessment typically considers impacts in terms of three categories—direct, indirect, and induced. Direct effects are those experienced by the fishing and seafood industries. Effects experienced by the suppliers to the fishing and seafood industries, as well as the subsequent stream of suppliers to suppliers, are indirect effects. The impacts created when the wages of workers in directly and indirectly affected industries are spent in the regional economy are induced effects.

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<sup>1</sup>A detailed description of input/output modeling and the model developed to assess the economic impacts of Virginia's Commercial seafood industry is available in Kirkley (1997), "Virginia's Commercial Fishing Industry: Its Economic Performance and Contributions," Virginia Institute of Marine Science, VSG-97-02. The model developed for the assessment of the potential economic impacts of Graham and Rollins required updating information to reflect more recent economic activity.

The input/output model developed for assessing the potential economic impacts of Graham and Rollins business considers the harvesting sector, processing/wholesaling sector, distributing, at-home and away from home sales or the retail sector. Impacts are estimated in terms of sales or output, income, and employment generated. Sales or output is a measure of the total dollar value of production; income consists of employee compensation, proprietary income, other property type income, and indirect business taxes; and employment equals the number of jobs generated, which includes both full and part-time jobs. The estimated economic impacts reflect activities only in the Commonwealth of Virginia. Alternatively, the economic impacts generated by products purchased or sold out of state are not included in the assessment of the economic impacts on Virginia's economy. Dollar value impacts (sales/output and income) are in terms of year 2004 constant dollar values.

**Economic Impacts on Virginia's Economy:**

In 2003, Graham and Rollins purchased \$1.61 million worth of raw materials (blue crabs) for the purpose of producing picked crab meat and other miscellaneous products. Throughout the entire economy of Virginia, the processing and sales activities generated from the \$1.61 million purchase of raw materials generated a total of \$7.9 million in total sales or output, \$5.4 million in income, and 149 jobs (full-time and part-time) (Table 1). Harvesting and processing activities were responsible for the majority of the economic impacts.<sup>2</sup> For example, processing activities by Graham and Rollins in 2003 generated 39 jobs in the harvesting sector (Table 2). Subsequently, processing activities generated 102 jobs in Virginia's economy. Impacts generated with retail sales and restaurants were relatively low.

Table 1. Economic Impacts Generated by Graham and Rollins 2003 Production and Sales Activities (All dollar values are in terms of 2004 Constant Dollar Values)

| Sales/Output Impact                          |           |             |             |
|--|-----------|-------------|-------------|
| Direct                                       | Indirect  | Induced     | Total       |
| \$3,291,246                                  | \$508,017 | \$4,147,965 | \$7,947,237 |
| Income Impact                                |           |             |             |
| Direct                                       | Indirect  | Induced     | Total       |
| \$2,742,784                                  | \$298,279 | \$2,343,419 | \$5,384,451 |
| Employment Impact (Jobs, full and part-time) |           |             |             |
| Direct                                       | Indirect  | Induced     | Total       |
| 75   | 7         | 77          | 149         |

<sup>2</sup>Note that the impacts by sector do not reflect the impacts generated in the sector, but rather by activities conducted in the sector. For example, processing activities generated 102 jobs for the Virginia economy. Similarly, Graham and Rollins purchased \$1.61 million worth of crabs from the harvesting sector, and the harvesting sector's production activities necessary to provide the \$1.61 million worth of crabs generated 39 jobs within the economy of Virginia.

Table 2. Distribution of Economic Impacts (2004 Constant Dollar Value)

| Blue crabs   | Sales/Output | Income      | Employment |
|--------------|--------------|-------------|------------|
| Harvesting   | \$3,358,200  | \$1,389,514 | 39         |
| Processing   | \$4,306,043  | \$3,732,168 | 102        |
| Distributing | \$201,972    | \$189,305   | 5          |
| Retail       | \$28,644     | \$26,848    | 1          |
| Restaurants  | \$52,377     | \$46,617    | 1          |
| Total        | \$7,947,237  | \$5,384,451 | 149        |

The potential economic impacts on Virginia's economy, however, may be overstated. This is because restaurants and retail outlets could obtain crab meat from other in-state or out of state distributors or suppliers. Alternatively, other processors could purchase crabs from either out of state or in state and produce the same quantity produced by Graham and Rollins, and thus, the potential economic losses would be considerably lower.