

## The Contribution of the Pet Turtle Industry to the Louisiana Economy

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Aquaculture is an important part of the state economy and includes a variety of activities, such as catfish and crawfish farming. The Louisiana pet turtle industry is an aquaculture activity that makes substantial economic contributions, especially at the local level.

The Louisiana pet turtle industry consists of the producers of pet baby turtles (red-eared sliders, *Trachemys scripta*) exclusively for the foreign export market. The industry is currently excluded from the domestic market because of concerns about use of antibiotics employed in eliminating salmonella. According to the Louisiana Department of Economic Development (1997), the industry is responsible for 85%-90% of the world market in pet baby turtles. In recent years, major market outlets have included the European Community (EC), the former Soviet Union States, and the developing economies of eastern Asia. However, a product ban by the EC in 1998 and financial difficulties in the former Soviet Union States and eastern Asia have reduced sales (Louisiana State University Agricultural Center 1998).

The industry started in Louisiana in the 1930s with the harvest of wild turtles. It was well developed in its current form—production of domesticated turtles in fenced ponds—by the

end of the 1950s. By 1969, there were 75 producers with annual output at 15 million baby turtles (Kuzenski 1976). Data provided by the Louisiana Department of Agriculture and Forestry (1999) show growth in output and number of producers since the mid-1980s. The number of producers has risen steadily from 24 in 1987 to 57 in 1998. The level of certified pet baby turtle sales has also increased from 3.7 million in 1986 to 8.6 million in 1997. Based on the level of production in 1997 and published (Louisiana State University Agricultural Center 1998) and unpublished (Metrejean 1998) 1997 average price estimates (\$0.70 per sold turtle) by broker/producers, the total value of output of the pet turtle industry was estimated at \$5.280 million in 1997. Historically, prices have fluctuated primarily due to market conditions, from highs of more than one dollar to lows of 21 cents per turtle.

This study examined the impact of the Louisiana pet turtle industry on the state economy by using a modified version of an input-output (I-O) model constructed with the Impact Analysis Planning (IMPLAN) model building system (Alward et al. 1989). Because the industry is unique, a survey was used to elicit cost information used in the modeling.

### Survey Results

Producers were asked to provide detailed information on costs and level of sales for the last full fiscal year (1997). They were also asked to

provide information on marketing channels for their purchases (retail, wholesale, or direct from the manufacturer) and to provide the location (in-state versus out-of-state) of the final seller of the input. Finally, they were asked to indicate the major problems currently facing the industry and their plans for future expansion.

A modified version of the Dillman design method (1978) was used to administer the survey. A list of all 57 Louisiana pet turtle producers in 1998 was obtained from the Louisiana Department of Agriculture and Forestry, which has complete information on industry participation because all production must be certified as salmonella free by the Department. Surveys were returned by 14 producers for a response rate of 24.6%. A marked difference between median and mean values for pond size and total farm size along with the skewness coefficient suggested the presence of several quite large firms among the survey respondents. Based on our estimate of the total value of industry production in 1997 (\$5.280 million), 56.2% of all production in the pet turtle industry was captured by in the survey response. Thus, responding surveys were assumed to adequately represent returns and costs for pet turtle producers in Louisiana.

Expenditure patterns in the Louisiana pet turtle industry showed labor as the largest expenditure category responsible for 19.8% of all costs. The second largest cost item was feed, accounting for 15.9% of all

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expenditures. Other cost items included fuel, shipping, utilities, laboratory testing fees, and salmonella treatment drugs. Net returns of 25.2% per dollar of sales indicated a profitable industry. However, fixed cost items that are used over several years and depreciate regardless of level of use (such as major equipment purchases) were not included as explicit cost items.

## Modeling Results

Information on costs was used to construct a new sector in the IMPLAN model of the Louisiana economy. The I-O model of the Louisiana economy was then used to evaluate the economic impact of the pet turtle industry on the state economy. Model results suggest a marked contribution by the pet turtle industry to the Louisiana economy. The total impact of the industry on output in the Louisiana economy was \$9.703 million (Table 1). Of this impact, 54.4% was directly in the Louisiana pet turtle industry, 27.4% was an indirect effect due purely to interindustry linkages, and 18.2% was the indirect effect due to household spending effects. As a result, one dollar of spending by the Louisiana pet turtle industry is predicted to generate \$1.838 (\$9,702,509/\$5,280,000) in the state economy. Total indirect and induced impacts were largest for prepared feeds n.e.c. (\$0.248 million) and wholesale trade (\$0.215 million). Smaller impacts were found in research, development, and testing services and in miscellaneous livestock. For industry groups, output impacts were largest in retail trade, finance, insurance and real estate (FIRE), petroleum products, and various transportation services.

Gross State Product (GSP) is the most important component of total output. Because it measures the return to factors of production, it is considered the best gauge of the contribution to economic activity of a given industry. In I-O models, GSP consists of employee compensation (payments to labor), net returns to owner-operators (a mixture of returns to primarily labor

and some capital), other property income (returns to capital), and indirect business taxes (taxes imbedded in prices, such as sale taxes).

The total impact of the pet turtle industry on GSP was estimated at \$4.696 million (Table 1). Slightly over half of the impact on GSP due to the pet turtle industry in Louisiana (\$2.377 million) was directly in that industry. One way of viewing impacts is to estimate how much one dollar of output (gross sales) in a particular sector would generate in GSP across the entire economy. One dollar of output in the pet turtle industry was predicted to generate \$0.889 in GSP in the entire state economy. Another way of viewing impacts is to estimate how much one dollar of GSP in a given sector (the direct impact) would generate in terms of GSP across the entire economy. One dollar of GSP in the pet turtle industry generated a total of \$1.975 in GSP throughout the

Louisiana economy. Among individual industries, factors of production committed to wholesale trade had the largest impact at \$0.148 million, followed by research, development and testing services (\$0.080 million), the construction sector, maintenance and repair other facilities (\$0.061 million), and miscellaneous livestock (\$0.059 million). Among industry groups, impacts on GSP were largest for retail trade (\$0.360 million), finance, insurance, and real estate (\$0.355 million), with markedly smaller impacts in health services, transportation services, and communications and utilities. Impacts in FIRE and health services were primarily the result of household spending (induced effects). Impacts in retail trade and communications and utilities were a mixture of induced and indirect effects while impacts in transportation services were primarily indirect in nature.

**Table 1. Impact of the Louisiana Pet Turtle Industry on the Louisiana Economy.**

| Industry Number and Name                      | Total Output (dollars) | Total Gross State Product (dollars) | Total Employment |
|-----------------------------------------------|------------------------|-------------------------------------|------------------|
| 9 Miscellaneous Livestock                     | 141,663                | 58,915                              | 4.1              |
| 12 Feed Grains                                | 43,617                 | 23,499                              | 0.6              |
| 26 Agricultural, Forestry, Fishery Services   | 37,374                 | 25,667                              | 1.6              |
| 56 Maintenance and Repair Other Facilities    | 113,044                | 60,931                              | 1.9              |
| 78 Prepared Feeds, N.E.C                      | 247,793                | 26,548                              | 0.6              |
| 332 Pumps and Compressors                     | 73,159                 | 22,069                              | 0.4              |
| 447 Wholesale Trade                           | 214,582                | 147,899                             | 2.4              |
| 509 Research, Development, & Testing Services | 143,254                | 80,069                              | 2.7              |
| 526 Pet Turtle Industry                       | 54,084                 | 27,667                              | 1.6              |
| 39 Mining                                     | 104,851                | 74,552                              | 0.4              |
| 48 Other Construction                         | 16,217                 | 5,990                               | 0.2              |
| 58 Other Manufacture                          | 177,022                | 52,484                              | 1.1              |
| 186 Chemicals and allied                      | 68,014                 | 27,202                              | 0.2              |
| 210 Petroleum products                        | 354,121                | 49,821                              | 0.3              |
| 439 Transportation Services                   | 345,735                | 159,448                             | 3.6              |
| 443 Communications and Utilities              | 252,084                | 153,750                             | 0.9              |
| 448 Retail Trade                              | 491,979                | 360,085                             | 15.0             |
| 462 FIRE                                      | 489,979                | 355,118                             | 3.1              |
| 464 Personal services                         | 121,121                | 64,348                              | 3.1              |
| 469 Business services                         | 152,856                | 109,718                             | 5.0              |
| 477 Automotive services                       | 116,875                | 57,801                              | 1.8              |
| 480 Repair services                           | 148,869                | 71,569                              | 2.3              |
| 490 Health services                           | 256,690                | 161,507                             | 3.9              |
| 502 Other Services                            | 116,191                | 61,531                              | 3.3              |
| 506 Professional services                     | 73,802                 | 53,610                              | 1.4              |
| 510 Government                                | 67,534                 | 26,860                              | 0.5              |
| 516 Special sectors                           | 0                      | 0                                   | 0.0              |
| <b>Total</b>                                  | <b>9,702,509</b>       | <b>4,696,037</b>                    | <b>881.9</b>     |

Source: IMPLAN model of the Louisiana Economy, 1996.

