

# Survey of Ice Plants in Louisiana, Mississippi, and Alabama, 1980-81

JOHN M. WARD and JOHN R. POFFENBERGER

## Introduction

Reports of ice shortages during the shrimp fishing season prompted a National Marine Fisheries Service, Southeast Fisheries Center study to determine the impact of the Texas closure regulation on ice plant production and sales. Like Texas, Louisiana controls the opening of the nearshore and inshore shrimp seasons. In the initial days of the season when shrimp are moving out of the inshore areas and are relatively abundant, the shrimp fishing effort is high. A large part of this effort is by recreational or part-time fishermen who own relatively small boats and use butterfly nets or small trawls to catch shrimp. There are estimated to be several thousand of these fishermen, and they increase the demand for the various dockside facilities during the opening days of the shrimp fishing season. More importantly, this surge in fishing effort occurs coincidentally with the period of the regulated Texas closure.

*ABSTRACT—This report presents the findings of the 1980-81 survey of ice plants in the coastal areas of Louisiana, Mississippi, and Alabama. The survey was undertaken by the National Marine Fisheries Service's Southeast Fisheries Center to determine the impact of the Texas closure regulation on the level of ice sales in this region. The 1980 survey was limited to Louisiana ice plants during the 13-week period of the spring brown shrimp season. The 1981 survey of Louisiana, Mississippi, and Alabama ice plants covered an 18-week period. The two surveys were compared using the 13-week period of the 1980 Louisiana survey. Results of the analysis indicate that weekly ice sales did not exceed productive and storage capacity in either year despite both the increased shrimp landings and the Texas closure regulation in 1981.*

In this paper we present and compare the results of the 1980-81 survey of production and sales of ice by plants in coastal Louisiana, Mississippi, and Alabama. The objective of the survey was to provide a data base that could be used to measure the ice production, storage capacity, and sales during this period of high demand. These data provided additional information on the conditions in the Gulf of Mexico shrimp fisheries during the period of the shrimp fishing closure in state and federally controlled waters off the coast of Texas.

## Description of Survey and Analysis of Results

The 1980 survey was limited to the 22 ice-making facilities that supply ice to fishermen along the coast of Louisiana west of the Mississippi River. During 1981, 42 ice plants were surveyed in Mississippi, Alabama, and Louisiana. In 1981, the number of ice plants operating in Louisiana increased from 22 to 24. As a result, the comparison of the 1980 and 1981 surveys was limited to the ice plants in the Louisiana area.

In order to estimate the demand for ice, the survey consisted of collecting data on the daily amount of ice sold by the plants from May to August during 1980 and 1981. Fortunately, the clientele using these ice plants consists almost entirely of shrimp fishermen. The results are reported in the "Total sales" column of Tables 1-3 ( $\sum S_{wi}$  in

The authors are with the Economic Analysis Group, Southeast Fisheries Center, National Marine Fisheries Service, NOAA, 75 Virginia Beach Drive, Miami, FL 33149.

**Table 1.—Ice production and sales (in blocks of ice) for Louisiana plants, 1980<sup>1</sup>.**

No.	Week	Operating capacity		Total sales	Total sales as a percent of weekly operating capacity
		Daily <sup>2</sup>	Weekly <sup>3</sup>		
1	5/19-5/25	10,200	52,020	30,888	59
2	5/26-5/31	11,000	56,100	31,159	56
3	6/1-6/8	11,900	60,690	31,781	52
4	6/9-6/15	12,053	61,470	28,563	46
5	6/16-6/22	12,053	61,470	26,842	44
6	6/23-6/29	12,053	61,470	24,235	39
7	6/30-7/6	12,053	61,470	22,896	37
8	7/7-7/13	12,053	61,470	22,465	37
9	7/14-7/20	10,673	54,432	18,544	34
10	7/21-7/27	10,673	54,432	18,908	35
11	7/28-8/3	10,673	54,432	20,281	37
12	8/4-8/10	10,673	54,432	20,082	37
13	8/11-8/17	7,206	36,751	16,545	45
Total		730,639	313,189	43 <sup>4</sup>	

<sup>1</sup>These data are from "A Report on a Survey of Ice Plants in Western Louisiana" prepared by John Poffenberger in December 1980 based on 22 ice plants. To convert to pounds or tons, multiply these figures by 300 or 0.15, respectively.

<sup>2</sup>This column presents the sum of the rated capacities of the ice plants on a daily basis, which may vary from week to week because some plants did not report sales for every week.

<sup>3</sup>Weekly capacity is defined as 85 percent of daily rated plant capacity operating 6 days per week.

<sup>4</sup>Mean value of total sales as a percent of weekly capacity.

Equation (1)).

To estimate the supply of ice, the plant managers were asked to rate their plant operating capacity, i.e., the actual level of daily ice production. These estimates ranged from 75 to 90 percent of the manufacturer's rating of maximum daily ice production. The ice sales data collected also indicated that most plants operated fewer than 7 days a week. Therefore, the manufacturer's daily rated capacity was reduced by 15 percent, and the plants were assumed to operate only 6 days a week to pro-

vide a realistic estimate of the weekly operating capacity.

The column labeled "Daily Operating Capacity" in Tables 1-3 provides the manufacturer's daily rated capacity for all plants that reported ice sales during that week ( $\Sigma C_{di}$  in Equation (1)). This figure varies from week to week since weekly ice sales data were not reported by all ice plants. Therefore, if a plant did not report its sales, its capacity was not included in this total. The next column provides the weekly operating capacity which is 85 percent of the daily operating capacity for 6 days as described above ( $5.1 \Sigma C_{di}$  in Equation (1)). The final column presents the percent of the weekly operating capacity that was sold, i.e.:

$$\frac{\sum_{i=1}^n S_{wi}}{5.1 \sum_{i=1}^n C_{di}} \times 100 \quad (1)$$

where  $\Sigma C_{di}$  = daily capacity of plant  $i$ ,

$\Sigma S_{wi}$  = weekly sales of plant  $i$ , and

$n$  = number of plants.

A comparison of 1980 and 1981 surveys for Louisiana is presented in Table 4. This comparison is limited to the 13-week period of the 1980 survey. Columns labeled "Percent Utilization" present sales as a percent of operating capacity for 1980 and 1981.

Finally, ice storage capacity information was collected. Such information is useful in determining the potential effects of increased demand for ice. Reported estimates by the plant managers indicate that there was an increase in storage capacity from 30,900 to 42,900 blocks of ice in Louisiana between 1980 and 1981. In addition, 1981 estimates for Mississippi and Alabama indicated a storage capacity of approximately 12,670 blocks of ice. If the demand for ice is at or exceeds the operating capacity of the ice plants and if the demand is distributed geographically the same as supply, then this storage capacity could temporarily avert shortages in supply. The time

Table 2.—Ice production and sales (in blocks of ice) for Louisiana plants, 1981<sup>1</sup>.

No.	Week	Operating capacity		Total sales	Total sales as a percent of weekly operating capacity
		Daily <sup>2</sup>	Weekly <sup>3</sup>		
	5/1-5/3	8,953	15,220 <sup>4</sup>	5,920	39
	5/4-5/10	9,086	46,339	14,574	31
	5/11-5/17	10,429	53,188	21,174	40
1	5/18-5/24	11,424	58,262	22,419	38
2	5/25-5/31	11,424	58,262	22,432	39
3	6/1-6/7	11,786	60,109	34,481	57
4	6/8-6/14	11,786	60,109	30,324	50
5	6/15-6/21	11,786	60,109	30,275	50
6	6/22-6/28	11,786	60,109	27,608	46
7	6/29-7/5	11,633	59,328	19,105	32
8	7/6-7/12	11,253	57,390	16,652	29
9	7/13-7/19	11,253	57,390	17,280	30
10	7/20-7/26	11,253	57,390	14,992	26
11	7/27-8/2	8,951	45,650	12,829	28
12	8/3-8/9	6,860	34,986	9,973	29
13	8/10-8/16	6,860	34,986	16,461	47
	8/17-8/23	5,140	26,214	8,708	33
	8/24-8/30	4,900	24,990	4,026	16
	8/31	4,900	4,165 <sup>5</sup>	659	16
Total			874,196	329,892	38 <sup>6</sup>

<sup>1</sup>These data are from a survey of ice plants conducted during the 1981 shrimp season, based on 24 ice plants. To convert to pounds or tons multiply these figures by 300 or 0.15, respectively.

<sup>2</sup>This column presents the sum of the rated capacities of the Louisiana ice plants on a daily basis, which may vary from week to week because some plants did not report sales for every week.

<sup>3</sup>Weekly operating capacity is defined as 85 percent of daily rated plant capacity operating 6 days per week.

<sup>4</sup>Based on 2 days of operation.

<sup>5</sup>Based on 1 day of operation.

<sup>6</sup>Mean value of total sales as a percent of weekly operating capacity.

Table 3.—Ice capacity and sales (in blocks of ice) for Mississippi and Alabama, 1981<sup>1</sup>.

Week	Operating capacity		Total sales	Total sales as a percent of weekly operating capacity
	Daily <sup>2</sup>	Weekly <sup>3</sup>		
6/1-6/7	7,035	35,879	24,547	68
6/8-6/14	7,035	35,879	31,380	87
6/15-6/21	7,035	35,879	30,131	84
6/22-6/28	7,035	35,879	24,734	69
6/29-7/5	6,692	34,129	19,348	57
7/6-7/12	6,555	33,431	19,351	58
7/13-7/19	6,555	33,431	17,830	53
7/20-7/26	6,555	33,431	14,925	45
7/27-8/2	6,349	32,380	14,823	46
8/3-8/9	6,502	33,160	13,404	40
8/10-8/16	6,555	33,431	14,626	44
8/17-8/23	6,555	33,431	13,246	40
8/24-8/30	6,555	33,431	10,694	32
8/31	—	—	326	—
Total		443,771	249,039	56 <sup>4</sup>

<sup>1</sup>These data are from a survey of 18 ice plants conducted during the 1981 shrimp season. To convert to pounds or tons, multiply these figures by 300 or 0.15, respectively.

<sup>2</sup>This column presents the sum of the rated capacities of the ice plants on a daily basis, which may vary from week to week because some plants did not report sales for every week.

<sup>3</sup>Weekly operating capacity is defined as 85 percent of daily rated plant capacity operating 6 days per week.

<sup>4</sup>Mean value of total sales as a percent of weekly operating capacity.

Table 4.—Sales as a percent of weekly operating capacity (in blocks of ice) of Louisiana ice plants, 1980-81.

Week no. <sup>1</sup>	Percent utilization		Week no.	Percent utilization	
	1980	1981		1980	1981
1	59	38	8	37	29
2	56	39	9	34	30
3	52	57	10	35	26
4	46	50	11	37	28
5	44	50	12	37	29
6	39	46	13	45	47
7	37	32	Avg.	43	39

<sup>1</sup>These numbers refer to the week numbers in Tables 1 and 2 covering the period of time when the survey results were compared.

span for which shortages will be prevented is commensurate with the amount that demand exceeds capacity. For example, based on 1981 survey data, a daily ice demand of 10,000 blocks greater than operating capacity will cause shortages in about 5 days.

### Conclusions

The 1980 and 1981 surveys in Louisiana, Mississippi, and Alabama indicate that there were no shortages of ice on a weekly basis. The daily data indicate that bottlenecks did occur at various ice-loading facilities in Mississippi and Alabama. These bottlenecks, resulting in the queuing of vessels for several days, were due mainly to the reported surge in the demand for ice by part-time and recreational fishermen during the beginning of the season. While some excesses of daily ice sales over operating capacity were reported, storage capacity was apparently sufficient to prevent shortages.

Louisiana's 1980 weekly ice sales ranged from 34 to 59 percent of operating capacity during the 13-week survey with a mean value of 43 percent (Table 1). In 1981, Louisiana's weekly ice sales ranged from 16 to 57 percent of operating capacity during the 19-week survey, with a mean value of 38 percent (Table 2). Also, in 1981, Mississippi and Alabama's weekly ice sales ranged from 32 to 87 percent of operating capacity during the 19-week survey with a mean value of 56 percent. If the same 13-week period of the 1980 survey (Table 1) is used in the 1981 survey of Louisiana (Table 2), the

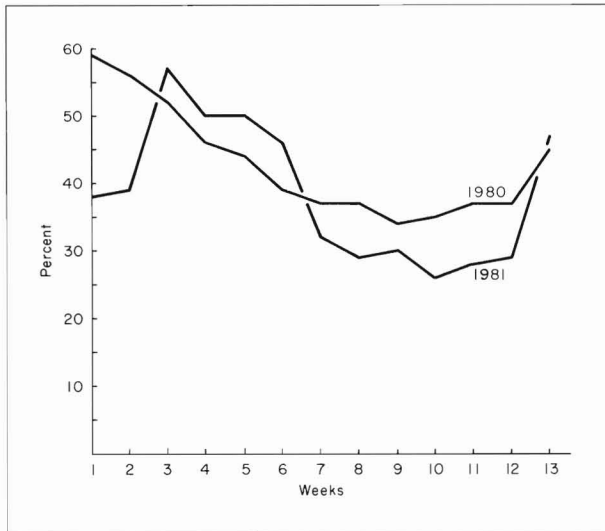


Figure 1.—Sales (blocks of ice) as a percent of weekly operating capacity of Louisiana ice plants, 1980-81.

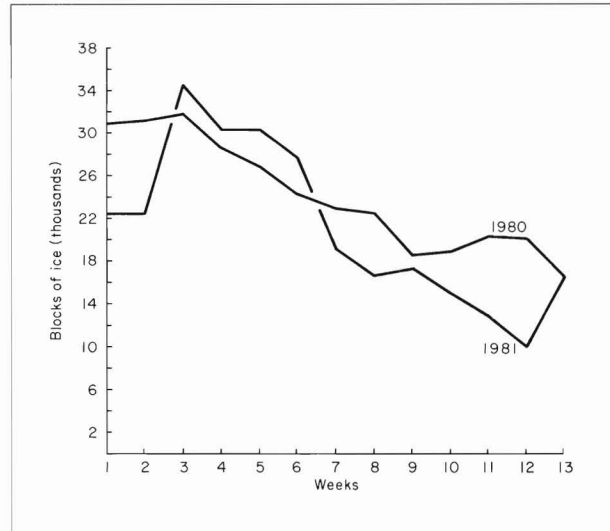


Figure 2.—Weekly sales of ice blocks by Louisiana plants, 1980-81.

ice sales range from 26 to 57 percent of operating capacity, with a mean value of 39 percent. This decline in the mean percentage for Louisiana is possibly due to the appearance of two new ice plants in 1981.

The comparison of the Louisiana ice plant survey for 1980 and 1981, of Tables 1-4, is presented graphically in Figures 1 and 2. The information presented in Figure 1 indicates the level of ice sales as a percentage of weekly operating capacity, and Figure 2 presents the absolute level of total sales of ice blocks for the 2 years of the survey.

Weekly data indicate that ice sales in 1981 did exceed the 1980 level, either as an absolute or as a percent of operating capacity, during the Texas clo-

sure (22 May-15 July or weeks 1-9 of Figures 1 and 2). However, as Figure 1 indicates, the level of sales did not approach operating capacity and, as the Texas closure came to an end, 1981 ice sales as a percent of operating capacity declined below the 1980 level. In Figure 2, the same pattern is observed for the absolute level of ice sales, with a decline of about 12 percent in total sales between 1980 and 1981 for the 13-week period. Thus, during the period of the Texas closure, demand for ice increased in Louisiana in 1981 relative to 1980.

As the Texas closure came to an end, ice demand declined below the 1980 level in both absolute and relative terms. This 2-year comparison of ice

utilization in Louisiana implies a shift of fishing effort into Louisiana during the closure period and then out of Louisiana as the closure ended.

#### Acknowledgments

Without the persistent efforts of Kathleen Herbert (1980 Louisiana Survey), Doyal G. Van Orman (Mississippi and Alabama 1981 Surveys), and Samuel J. Harden (Louisiana 1981 Survey), this research project and the resulting report could not have been prepared. We also extend our appreciation to the port agents in Louisiana, Mississippi, and Alabama for their help and assistance in carrying out the survey in 1980 and 1981.