# THE COASTAL FISHERMEN OF LOUISIANA: THEIR CHARACTERISTICS, ATTITUDES, PRACTICES AND RESPONSIVENESS TO CHANGE



by

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A study of fishermen in the coastal areas of Louisiana was undertaken in order to identify more precisely the potential audiences for Extension work as a part of the Sea Grant advisory effort. This study was initiated because the research findings emanating from the Sea Grant Program must ultimately find their way into usage by the practitioners who harvest and process the products of the sea and coastal areas. The success of this technology transfer process is a vital link in the chain of development. There are, however, built-in resistance factors that impede change, resulting in anomalies in the effective utilization of new knowledge by people. Since the groups which comprise the wildlife and fishing industry in Louisiana are relatively new audiences (i.e. from the standpoint of technology), there is much to be learned about their responsiveness to change and the strategies and methodologies that might be employed in promoting change.

The extension education concept as it has evolved in the past 70 years involves three component parts: (1) the centers where new knowledge is generated; (2) the clientele who become the appliers

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of the new technology in their everyday work world; and (3) the extension education agency which facilitates the change process. The extension education agency serves as the two-way communication link between the knowledge center and the potential users of new technology, bringing to the clientele new information and gaining from the clientele knowledge of problems and practices utilized. This study, therefore, was designed as a means of becoming more knowledgeable about potential audiences so that a more effective extension education program could be developed for the Sea Grant program.

## RESEARCH DESIGN

### Objectives of the Study

The major objective was to identify problems and opportunities for an organization with the capability of delivering effective extension education programs to appropriate audiences through the Sea Grant program. Secondary objectives included the following:

1. To characterize these audiences precisely as to:
   a. Personal characteristics--age, education, beliefs, values, attitudes, etc.
   b. Sources of information utilized in their operations.
   c. Leadership and participation patterns that existed among the various groups and localities.
2. To identify felt needs and problems among the potential audiences.
3. To determine the basic practices utilized in their operations.

The Sample

Fourteen coastal parishes in Louisiana were included in the study (see Figure 1). These parishes were those contiguous to the Gulf of Mexico, Vermilion Bay, Barataria Bay, Lake Pontchartrain and Lake Maurepas. The lists of licensed fishermen from these parishes were obtained from the Louisiana Wild Life and Fisheries Commission, and the number holding shrimp, oyster or commercial fishing licenses from the 14 parishes was determined. Through this procedure, 7,369 names were identified and a stratified random list sample was selected. A sample size of 500 (7 per cent) was deemed necessary in order to ensure adequate representation for the entire population. It was determined that every 14th name on the list would be selected, and number 6 was selected at random as the beginning point. Subsequently, every 14th name beginning with six was selected until the quota for a particular parish was reached (see Table 1). When a name was selected for a parish, then the next name from the parish appearing on the list was selected as an alternate.

In actuality, 474 persons were intereviewed and 467 usable schedules were obtained (see Table 1). In several instances, the quota for a parish was not reached because of the difficulty of contacting persons selected for the sample. Because of time limitations, the interview process was terminated as of April 30, 1973.

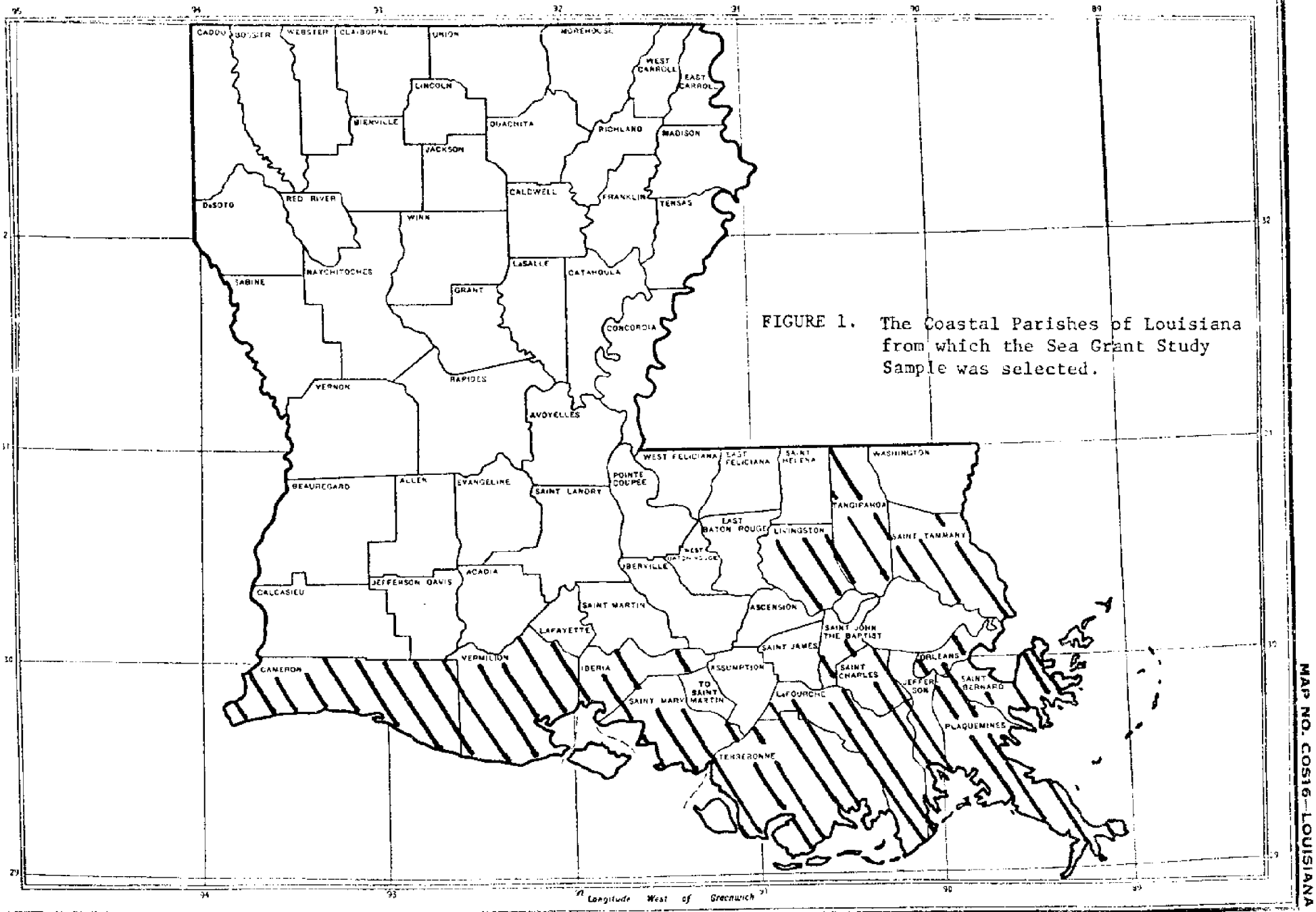


FIGURE 1. The Coastal Parishes of Louisiana from which the Sea Grant Study Sample was selected.

MAP NO. COS16—LOUISIANA

TABLE 1. Numbers of Licensed Fishermen, Sample Size, and Actual Numbers of Interviews by Parishes

| Parish | No. of Licensed Fishermen | Sample Size | Number Interviewed |
|---|---|---|---|
| Cameron | 323 | 22 | 15 |
| Iberia | 349 | 24 | 25 |
| Jefferson | 1,240 | 86 | 82 |
| Lafourche | 620 | 43 | 41 |
| Orleans | 513 | 35 | 23 |
| Plaquemines | 627 | 44 | 30 |
| St. Bernard | 475 | 33 | 33 |
| St. Charles | 152 | 11 | 11 |
| St. John | 44 | 3 | 3 |
| St. Mary | 567 | 39 | 36 |
| St. Tammany | 134 | 9 | 7 |
| Tangipahoa | 42 | 3 | 5 |
| Terrebonne | 1,714 | 119 | 126 |
| Vermilion | 569 | 39 | 37 |
| TOTAL | 7,369 | 510 | 474 |

Interview Schedule

The interview technique was selected because it was expected that it would provide an opportunity to gain in-depth knowledge about the persons in the sample, and this depth of knowledge was considered to be a valuable asset in not only providing data for the study but

for the edification of those who conducted the interviews. The actual interviewing process in each parish was under the leadership of the county extension agent who served as chairman of the local Extension staff.

The interview schedule was designed to procure five different types of information as follows:

1. A series of questions elicited information to establish the characteristics of the respondents such as occupation, age, education, etc.
2. Opinions were sought on selected issues pertinent to the fishing industry through a series of questions.
3. Information was sought on the practices utilized in selected aspects of the fishing industry: shrimping, oyster farming, commercial fishing, etc.
4. A sequence of questions was utilized to determine responsiveness of the fishermen to new ideas and sources of information in learning about new ideas.
5. Participation and leadership patterns among fishermen were sought through a set of prepared questions, including present levels of participation in extension programs.

The interview schedule was prepared by the author and Dr. James F. Fowler, Wildlife and Fisheries Specialist with Cooperative Extension, and reviewed by selected officials and specialists in the Louisiana Sea Grant program and the Louisiana Wild Life and Fisheries Commission.

Pre-testing of the schedule was done with several fishermen. As a consequence, appropriate revisions were made in the schedule.

Data Collection Process

The Cooperative Extension Service of the University served as the basic vehicle for the collection data. As mentioned earlier, the chairman of the Parish Extension staff was responsible for the collection of data in his parish, but numerous other professional staff members participated, including supervisors, subject-matter specialists and other parish agents. Interviews ranged in time from one-half to an hour in length. A substantial number were also conducted in French, the lingua franca of many of the rural people of the region, making it necessary in certain parishes for interviewers to be able to speak French.

Three training meetings were held to familiarize the interviewers with the interview schedule, with each one being held for a different group in a different section of the state. The schedule was explained in detail and questions and problems were discussed at length. A representative from the Office of the Sea Grant Development participated in the meeting.

The data collection process began in August, 1972, and continued until April, 1973. Depending on local circumstances and problems, the interviews by parishes proceeded at different intervals. Problems were apparent in the urban localities where people were difficult to locate, and the part-timers, especially, were hard to track down. Since they generally held regular jobs and fished during their days off,

night interviews were necessary, creating a long, tedious period because only one or two interviews would be obtained in any one night.

Data Analysis

This study was largely exploratory in nature and the normative survey approach was used. Since the purposes were largely descriptive in nature, it was felt that a highly sophisticated research design and/or statistical technique was not required. As a consequence, the data are presented in tabular form to facilitate analysis and to visually portray the differences that may be apparent.

The data were divided on the basis of type of fishermen: Shrimpers (N=407) and Other Fishermen (N=85).* The shrimpers were further divided into full-time (N=155) and part-time (N=252) operators. It was felt that variations among the various sub-groups would be possible, and it was important to review these variations, if they should occur. Within the shrimper category, particularly because of the large numbers involved, it was felt that it was necessary to review the possible differences between full-timers and part-timers.

## DATA ANALYSIS

For the presentation of data, eight sections were organized. These are as follows: (1) characteristics of the respondents,

*Twenty-five of the shrimpers were also involved in other types of fishing so that their responses appeared twice: once as a part-time shrimper and again as an other fisherman.

(2) the fishing operation, (3) opinion, attitudes and problems, (4) knowledge of and contact with Cooperative Extension, (5) usage, opinion and sources of new ideas, (6) leadership and participation patterns, (7) shrimping practices, and (8) other fishing practices. Within the section on other fishing practices utilized, further subdivisions were made into the practices utilized by crabbers, commercial fishermen and oystermen.

Characteristics of the Fishermen

The coastal fisherman of Louisiana tended to be middle-aged, to have a low level of education and to be a rural resident (Table 2). These data present a picture of a group, therefore, that is somewhat atypical from the larger strata of society. They tend to be older, have less education and reside in rural areas. In this sense they exemplify the traditional agricultural audiences of Cooperative Extension.

About one-half of the fishermen (52 per cent) fell into the category of 40 to 59 years of age and about one-third (35 per cent) were under 40. Only slight differences were apparent among the various types of fishermen.

Educational levels, however, were more diverse and there were some notable differences among the types of fishermen. More of the full-time shrimpers (52 per cent) had an educational level of seven years or below, compared with the part-timers (35 per cent). On the other hand, about one-fourth (27 per cent) of the shrimpers and over one-third (36 per cent) of the other fishermen had high school degrees.

TABLE 2. Personal Characteristics by Type of Fishermen

| Characteristics | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467* |
| **Age** | | | | |
| Below 40 years | 37 | 34 | 33 | 35 |
| 40-59 years | 56 | 50 | 51 | 52 |
| 60 years and over | 7 | 16 | 16 | 13 |
| | 100 | 100 | 100 | 100 |
| **Education** | | | | |
| Three years or less | 14 | 16 | 16 | 16 |
| 4-7 years | 38 | 19 | 26 | 25 |
| 8-11 years | 30 | 33 | 22 | 29 |
| High school or more | 20 | 32 | 36 | 30 |
| | 100 | 100 | 100 | 100 |
| **Residence** | | | | |
| Urban | 19 | 53 | 34 | 39 |
| Rural | 81 | 47 | 66 | 61 |
| | 100 | 100 | 100 | 100 |

* Since twenty-five of the fishermen were also shrimpers, their responses appear in both categories.

When residence was reviewed, rural areas predominated, particularly for the full-time shrimpers (81 per cent). The part-time shrimpers were more or less evenly divided between urban (53 per cent) and rural (47 per cent) residences. For all of the fishermen, six out of ten lived in rural areas.

## The Fishing Operation

The characteristics of the fishing operations presented a striking pattern. Substantial proportions of the fishermen (43 per cent) had

been engaged in fishing for over 20 years (Table 3). This was especially evident for the full-time shrimpers (47 per cent) and the other fishermen (50 per cent). The part-time shrimpers evidenced a much lower term commitment, with 40 per cent having been engaged in shrimping for less than ten years.

TABLE 3. Selected Characteristics of the Fishing Business by Type of Fishermen

| Selected Characteristics | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other Fishermen | All Fishermen |
| | Full-Time N=155 | Part-Time N=252 | N=85 | N=467 |
| Years in Fishing Business | | | | |
| 1-10 years | 27 | 40 | 32 | 34 |
| 11-20 years | 26 | 24 | 18 | 23 |
| Over 20 years | 47 | 36 | 50 | 43 |
| | 100 | 100 | 100 | 100 |
| Main Source of Income | | | | |
| Fishing | 100 | 21 | 72 | 53 |
| Other Sources | - | 79 | 28 | 47 |
| | 100 | 100 | 100 | 100 |
| Type of Fishing Operation | | | | |
| Primarily fishing | 92 | 99 | 85 | 94 |
| Primarily marketing | 8 | 1 | 15 | 6 |
| | 100 | 100 | 100 | 100 |
| Role of Respondent | | | | |
| Owner | 84 | 91 | 92 | 88 |
| Part-owner | 7 | 9 | 5 | 9 |
| Managerial | 9 | - | 3 | 3 |
| | 100 | 100 | 100 | 100 |
| Time Expended in Fishing | | | | |
| Part-time--less than 10% | - | 53 | 17 | 27 |
| Part-time--over 10% | - | 47 | 18 | 23 |
| Full-time | 100 | - | 65 | 50 |
| | 100 | 100 | 100 | 100 |

There were apparent differences in main source of income as one would expect by the designation of the categories. All of the full-time shrimpers obviously received their main source of income from fishing. In the case of the part-timers, however, almost one-fourth (21 per cent) reported fishing as their main source of income, and almost three-fourths (72 per cent) of the other fishermen reported likewise.

By and large the operations were largely fishing in nature. Only small proportions reported the marketing aspects of the fisheries business as their primary endeavor. Only 8 per cent of the full-time and 1 per cent of the part-time shrimpers indicated heavier involvement in marketing than they did in fishing directly, compared with 15 per cent of the other fishermen who gave the same indication.

For the most part the fishermen were owners of their businesses (88 per cent overall). A small segment (9 per cent) were part-owners, while the very small remaining portion (3 per cent) were managers. The manager category, as one might expect, was concentrated basically among the full-timers, mostly in the shrimping group.

All of the full-time shrimpers, of course, gave full-time to their occupation. Among the part-timers, however, 53 per cent reported spending less than 10 per cent of their time on fishing, indicating that it was primarily an avocation for them. The remaining 47 per cent varied widely in the proportions of time given to fishing. Among the other fishermen category, about two-thirds (65 per cent) were full-timers, and less than one out of five (17 per cent) allocated

less than 10 per cent of their time to fishing. For the total group, exactly one-half were full-timers and about one-fourth (27 per cent) were involved for less than 10 per cent of the time.

Data on the usage of navigational devices are reported in Table 4. Three categories predominated for all fishermen: not using any device (35 per cent), using charts (33 per cent), and using a compass (58 per cent). Only small proportions used radar (7 per cent) and loran (5 per cent). Full-time shrimpers were the big users of radar (17 per cent) and loran (14 per cent).

TABLE 4. Usage of Navigational Devices by Types of Fishermen

| Usage of Navigational Equipment | Per Cent by Type of Fishermen* | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Not using | 23 | 43 | 33 | 35 |
| Using charts | 45 | 29 | 26 | 33 |
| Using compass | 71 | 51 | 52 | 58 |
| Using radar | 17 | 2 | 5 | 7 |
| Using loran | 14 | 1 | 1 | 5 |

* Since more than one type of device could be used, the data indicate more than 100 per cent.

Information on the usage of insurance and financing for the fishing operation was sought from the respondents, and these data are presented in Table 5. About one-third of all of the fishermen (35 per cent) reported that they had insurance on their fishing operation. Responses from the full-time (36 per cent) and part-time

(34 per cent) shrimpers were about the same, while a higher proportion of the other fishermen (45 per cent) reported having insurance. The local insurance agency was an overwhelming choice as the source of insurance for those who used it. Only very small proportions (2 per cent) used a national-type operation such as their source of insurance.

TABLE 5. Usage of Insurance and Financing by Types of Fishermen*

| Usage of Insurance | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Having insurance | 36 | 34 | 45 | 35 |
| Sources of insurance | | | | |
| Local agency | 34 | 32 | 41 | 33 |
| National agency | 2 | 2 | 4 | 2 |
| Having a loan on equipment | 40 | 11 | 22 | 22 |
| Sources of loans | | | | |
| Local bank | 32 | 8 | 14 | 16 |
| Loan company | 7 | 2 | 7 | 5 |
| Federal agency | 1 | 1 | 1 | 1 |

* For simplicity the no responses were left out.

Slightly less than one-fourth of the total sample of fishermen (22 per cent) reported loans to finance their operation in some form, principally on equipment. The heavy users, however, were the full-time shrimpers where 40 per cent indicated that they had loans. Small proportions of other fishermen (22 per cent) and part-time shrimpers (11 per cent) reported having a loan. The major source of loans for those who had them was the local bank, with 32 per cent of the full-time

shrimpers, 8 per cent of the part-time shrimpers and 14 per cent of the other fishermen giving this indication. Smaller percentages (5 per cent overall) gave loan companies as a source. Only 1 per cent reported using a Federal loan agency. Proportionately speaking, about three-fourths used the local bank, while about one-fourth used a loan company.

Opinions, Attitudes and Problems

A series of questions were asked of the respondents concerning a range of activities and potential problems and actions in order to establish their opinions and attitudes about them. The first set dealt with the Sea Grant program (Table 6).

TABLE 6. Knowledge and Attitudes Toward the Sea Grant Program by Type of Fishermen

| Knowledge and Attitudes Toward Sea Grant | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Knowledge of Sea Grant | | | | |
| Yes | 36 | 19 | 28 | 27 |
| No | 59 | 77 | 69 | 69 |
| Not sure | 5 | 4 | 3 | 4 |
| | 100 | 100 | 100 | 100 |
| General Opinion of Sea Grant | | | | |
| Favorable | 20 | 10 | 18 | 15 |
| Unfavorable | 1 | - | 1 | 1 |
| Undecided | 79 | 90 | 82 | 84 |
| | 100 | 100 | 100 | 100 |

Relatively few of the respondents (27 per cent) reported knowing about the Sea Grant program, but more of the full-time shrimpers (36 per cent) and other fishermen (28 per cent) knew about the program as compared with the part-time shrimpers (19 per cent). Along with this, it is important to note that most of the fishermen had not formed opinions about the program. Eighty-four per cent were undecided, with more of the part-time shrimpers (90 per cent) falling into this category. Twenty per cent of the full-time shrimpers reported favorable opinions, compared with 15 per cent of the overall group.

Closely allied to the Sea Grant area is extension work with fishermen. The possibilities of this kind of work were explored with fishermen in order to get some idea about their opinion and attitudes, and these data are presented in Table 7.

The fishermen were asked to give their opinion about the usefullness of a Fisheries Extension Agent. About one-half of the sample (52 per cent) gave a rather positive response, indicating much to very much. The full-time shrimpers (64 per cent) and the other fishermen (56 per cent) were more in favor of this idea when compared with the part-time shrimpers (39 per cent). By the same token, there was a rather sizeable group who were less enthusiastic about the idea as evidenced by the fact that 48 per cent of the total group gave responses of some to little or none. This was further strengthened by the fact that about one-fourth (24 per cent) could think of no way in which an Extension Agent would be useful and 39 per cent could not respond with a comment about the role of the

Extension Fisheries Agent.

Among the responses elicited about ways in which agents could be helpful, the most prominent category of responses were those which listed them as information sources (42 per cent of all fishermen). Problem-solving was mentioned to a lesser degree by the total sample (17 per cent), and differences were apparent among the groups. More of the full-time shrimpers (27 per cent) and the other fishermen (20 per cent) made this response when compared with the part-time shrimpers (10 per cent). Sizeable proportions (41 per cent) gave rather negative responses such as "not seen and helpful," "fishing is a hobby," or "no opinion." The part-time shrimpers (48 per cent) gave these responses more frequently than did the others.

Looking at the expressions of the sample about the perceived role of the Fisheries Extension Agent, four types of ideas were elicited. The most frequently mentioned was "disseminating information," a point suggested by over one-fourth of the total sample (28 per cent). Following as the second most frequently mentioned item was "source of advice," an item mentioned by 19 per cent of the respondents. Less frequently mentioned were "spokesman for industry" (8 per cent) and "solve problems" (6 per cent). These last two items were mentioned more frequently by the full-time shrimpers and the other fishermen. Thirty-nine per cent had no opinion, and this was especially evident for the part-time shrimpers (48 per cent).

TABLE 7. Opinions of Usefulness of Fisheries Extension Work by Types of Fishermen

| Opinions of Usefulness | Per Cent By Type Fishermen: Shrimpers Full-Time N=155 | Shrimpers Part-Time N=252 | Other Fishermen N=85 | All Fishermen N=467 |
|---|---|---|---|---|
| **Usefulness of a Fisheries Extension Agent** | | | | |
| Very much | 54 | 27 | 45 | 40 |
| Much | 10 | 12 | 11 | 12 |
| Some | 26 | 30 | 26 | 29 |
| Little or none | 10 | 31 | 18 | 19 |
| | 100 | 100 | 100 | 100 |
| **Ways in Which an Agent Could Be Helpful** | | | | |
| Information source | 41 | 42 | 49 | 42 |
| Help solve problems | 27 | 10 | 20 | 17 |
| Not seen as helpful | 6 | 6 | 5 | 6 |
| Fishing is a hobby | - | 18 | 7 | 11 |
| No opinion | 26 | 24 | 19 | 24 |
| | 100 | 100 | 100 | 100 |
| **Role of Fisheries Extension Agent** | | | | |
| Disseminating information | 30 | 26 | 38 | 28 |
| Source of advice | 18 | 21 | 21 | 19 |
| Spokesman for industry | 17 | 2 | 7 | 8 |
| Solve problems | 9 | 3 | 14 | 6 |
| No opinion | 26 | 48 | 20 | 39 |
| | 100 | 100 | 100 | 100 |

A series of questions concerning coastal zone management were asked of the respondents. Their replies are summarized in Table 8. On this particular issue there were wide variations in opinion, indicating that a substantial educational job will be needed in this area if coastal zone management proposals are to be understood by the fishermen along the coast. When querried about general attitude

toward coastal zone management, almost one-half (46 per cent) were favorable, while about one-fourth (23 per cent) were unfavorable and one-third (31 per cent) were undecided. The full-time fishermen (52 per cent) tended to be favorable, and more of the undecided category (35 per cent) was found among the part-time shrimpers.

Regarding reasons for the attitudes, two major ideas emerged, and they were of a divergent nature. One idea, that conservation was necessary, was mentioned by 30 per cent of the total group. An opposing idea, favoring free choice usage, was mentioned by 14 per cent of the sample. The remainder expressed either assorted ideas or had no opinion.

The question related to preferred level of enforcement responsibility also evoked varied responses. Almost equal percentages of the total sample indicated the local (29 per cent) and the state (32 per cent) levels of enforcement. A smaller percentage (16 per cent) favored the federal level. Almost one-fourth (23 per cent) were undecided. There were no strong differences among the groups.

It was interesting to note, however, that the preponderant number were willing to cooperate in gathering information about the coastal zone, with 71 per cent giving a positive response. Larger proportions of the full-time shrimpers (81 per cent) and the other fishermen (77 per cent) were willing to help, compared with the part-time shrimper (63 per cent).

TABLE 8. Attitudes toward Increased Regulation of the Usage of the Coastal Zone by Types of Fishermen

| Attitude | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Attitude toward Increased Regulation | | | | |
| Favorable | 52 | 41 | 46 | 46 |
| Unfavorable | 23 | 24 | 29 | 23 |
| Undecided | 25 | 35 | 15 | 31 |
| | 100 | 100 | 100 | 100 |
| Reasons for Attitude | | | | |
| Prefer free choice | 16 | 14 | 20 | 14 |
| Conservation necessary | 33 | 27 | 28 | 30 |
| Other expressions | 26 | 25 | 21 | 27 |
| No response | 25 | 34 | 31 | 29 |
| | 100 | 100 | 100 | 100 |
| Preferred Level of Enforcement Responsibility | | | | |
| Local | 27 | 27 | 39 | 29 |
| State | 28 | 37 | 25 | 32 |
| Federal | 19 | 13 | 17 | 16 |
| Undecided | 26 | 23 | 19 | 23 |
| | 100 | 100 | 100 | 100 |
| Willingness to Cooperate in Gathering Information about the Coastal Zone | | | | |
| Yes | 81 | 63 | 77 | 71 |
| No | 5 | 25 | 12 | 8 |
| Undecided | 14 | 12 | 11 | 21 |
| | 100 | 100 | 100 | 100 |

The possibility of forming cooperatives was explored with the fishermen. In response to a question of whether they considered cooperatives helpful, only 26 per cent responded positively, with

more of the full-time shrimpers (36 per cent) responding in this manner (Table 9). A sizeable proportion (43 per cent) were negative in their viewpoints, and when coupled with the undecided category (31 per cent), a very substantial element was found to be wary of cooperatives. The reasons for these opinions seemed to center on several opposing viewpoints. A goodly proportion, particularly among the full-time shrimpers (34 per cent), felt that cooperatives would improve the marketing situation. On the opposite side, four varied opinions were mentioned, detrimental to marketing (5 per cent), difficult to work together (5 per cent), not useful locally (14 per cent), and satisfaction with present conditions (8 per cent). Forty-three per cent had no opinion.

TABLE 9. Opinions about Cooperatives by Type of Fishermen

| Opinions about Cooperatives | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Helpfulness of Cooperativeness | | | | |
| Yes | 36 | 20 | 32 | 26 |
| No | 46 | 40 | 46 | 43 |
| Undecided | 18 | 40 | 22 | 31 |
| | 100 | 100 | 100 | 100 |
| Reasons for Opinions | | | | |
| Improve marketing | 34 | 20 | 30 | 25 |
| Detrimental to marketing | 8 | 3 | - | 5 |
| Difficult to work together | 7 | 4 | 5 | 5 |
| Not useful to local situation | 7 | 20 | 17 | 14 |
| Present conditions satisfactory | 10 | 7 | 9 | 8 |
| No opinion | 34 | 46 | 39 | 43 |
| | 100 | 100 | 100 | 100 |

Opinions were sought with respect to the weather forcasting system. Fifty-five per cent responded good, indicating that a majority were pretty well satisfied (Table 10). Only 13 per cent felt that the system was poor. Although 68 per cent had no suggestions for improvement, three points did stand out: more frequent and specific information, more forecasts pinpointed to the Gulf and improved accuracy of the system.

TABLE 10. Opinions of Weather Forecasting System by Types of Fishermen

| Opinions about Weather Forecasting | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| General Opinion | | | | |
| Good | 51 | 57 | 52 | 55 |
| Fair | 29 | 26 | 26 | 26 |
| Poor | 14 | 11 | 19 | 13 |
| No opinion | 6 | 6 | 3 | 6 |
| | 100 | 100 | 100 | 100 |
| Suggestions for Improvement | | | | |
| More frequent and specific information | 17 | 12 | 12 | 14 |
| More gulf forecasts | 9 | 4 | 4 | 6 |
| Improve accuracy | 15 | 12 | 12 | 12 |
| Present system good | 9 | 13 | 13 | 12 |
| No opinion | 50 | 59 | 59 | 56 |
| | 100 | 100 | 100 | 100 |

Table 11 presents the opinions of the fishermen about the licensing system. Again as with the weather forecasting system, but in even heavier proportions, the response was favorable (68 per cent of all fishermen). A minority, 25 per cent, reported having some

question or feeling that the system was unfair. In regard to problems, 21 per cent suggested it was not fair to everyone, with the heavier response of 33 per cent coming from the full-time fishermen. Other problems mentioned include the laws not being enforced (8 per cent) and not being able to order by mail (3 per cent).

TABLE 11. Opinions of Licensing System for Fishermen by Types of Fishermen

| Opinions about Licensing System | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other Fishermen | All Fishermen |
| | Full-Time N=155 | Part-Time N=252 | N=85 | N=467 |
| **General opinion** | | | | |
| Generally good | 61 | 74 | 66 | 68 |
| Have some questions | 17 | 11 | 11 | 13 |
| Unfair | 17 | 7 | 14 | 12 |
| Undecided | 5 | 8 | 9 | 7 |
| | 100 | 100 | 100 | 100 |
| **Problems with system** | | | | |
| Not fair to everyone | 33 | 13 | 9 | 21 |
| Law not enforced | 14 | 5 | 9 | 8 |
| Cannot order by mail | - | 4 | 1 | 3 |
| Fees and their usage | - | 2 | 6 | 2 |
| No problems | 9 | 15 | 17 | 13 |
| No opinion | 44 | 61 | 58 | 53 |
| | 100 | 100 | 100 | 100 |
| **Checked for license** | | | | |
| Within a year | 42 | 23 | 35 | 30 |
| 1-2 years ago | 12 | 16 | 22 | 15 |
| Over 2 years ago | 15 | 13 | 4 | 13 |
| Not checked | 31 | 48 | 39 | 42 |
| | 100 | 100 | 100 | 100 |

The vast majority of the fishermen (72 per cent) felt that underwater obstructions were a problem (Table 12). This was almost universal among the full-time shrimpers where 87 per cent reported yes. The most

frequently mentioned obstructions were oil pipes (41 per cent) and debris and logs (23 per cent). Oil pipes were more frequently mentioned by full-time shrimpers, while debris and logs were more frequently cited by part-time shrimpers. The universal complaint was damage to nets, trawls and lines. Sixty-eight per cent indicated this concern. There were marked differences among the groups, however. Eighty per cent of the full-time shrimpers gave such a response, compared with only 39 per cent of the other fishermen.

TABLE 12. Attitudes toward Problems with Underwater Obstruction by Type of Fishermen

| Attitude toward Underwater Obstructions | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Consider to be a problem | | | | |
| Yes | 87 | 70 | 51 | 72 |
| No | 8 | 29 | 42 | 25 |
| Undecided | 5 | 1 | 7 | 3 |
| | 100 | 100 | 100 | 100 |
| Types of obstructions causing problems | | | | |
| Oil pipes | 61 | 33 | 28 | 41 |
| Debris--logs | 18 | 28 | 17 | 23 |
| Fishing apparatus of other fishermen | 6 | 9 | 5 | 7 |
| Submerged dams and buoys | 1 | 1 | - | 1 |
| No problem | 14 | 29 | 50 | 28 |
| | 100 | 100 | 100 | 100 |
| Problems | | | | |
| Damage to nets, trawls and lines | 80 | 68 | 39 | 68 |
| Damage to boat | 6 | 3 | 11 | 4 |
| No problem | 14 | 29 | 50 | 28 |
| | 100 | 100 | 100 | 100 |

With regard to opinions about sports fishermen, marked differences of opinion were apparent among the groups. While about two-thirds of the part-time shrimpers (65 per cent) reported a good opinion, the largest number of full-time shrimpers (43 per cent) expressed a poor opinion (Table 13). The other fishermen category was in a middle position between the other two, as evidenced by the fact that 49 per cent of them reported a good opinion and 31 per cent indicated a poor opinion. The full-time shrimpers expressed a series of complaints: crowding the waters, undercutting prices, breaking the laws, lacking safety and courtesy and lacking knowledge, with from 4 to 18 per cent of them indicating the various problems. Among the other fishermen, the principal complaints were breaking the law and lacking safety and courtesy.

TABLE 13. Opinions about Sport Fishermen by Type of Fishermen

| Opinions about Sport Fishermen | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other Fishermen | All Fishermen |
| | Full-Time N=155 | Part-Time N=252 | N=85 | N=467 |
| **General opinion** | | | | |
| Good | 32 | 65 | 49 | 52 |
| Fair | 18 | 15 | 15 | 16 |
| Poor | 43 | 19 | 31 | 24 |
| No opinion | 7 | 1 | 5 | 8 |
| | 100 | 100 | 100 | 100 |
| **Problems with Sports Fishermen** | | | | |
| Crowd waters | 16 | 5 | 4 | 8 |
| Undercut price | 18 | 4 | 9 | 9 |
| Break laws | 15 | 4 | 20 | 10 |
| Safety and courtesy | 10 | 3 | 10 | 8 |
| Lack of knowledge | 4 | 2 | 1 | 2 |
| Not a problem | 7 | 18 | 19 | 15 |
| No response | 30 | 62 | 37 | 48 |
| | 100 | 100 | 100 | 100 |

Knowledge of and Contact with Cooperative Extension

In order to establish some idea of what the respondents knew about Extension work, several questions were used to establish knowledge of the contact with elements of the Cooperative Extension Service. These data are presented in Table 14.

Forty-two per cent of the total sample knew of the county agent in the parish in which he lived. Interestingly enough, the part-time shrimpers (50 per cent) were more likely to be able to do so than were the full-time shrimpers (39 per cent). Most of the fishermen (62 per cent) did not know whom the county agent represented. Thirty per cent did mention L.S.U. Over half of the total respondents and two-thirds of the full-time shrimpers had no idea of his function. For the most part, those who did express an opinion mentioned working with farmers (30 per cent). Forty per cent reported that they had had children who were 4-H members, while only 6 per cent reported that their wives had been a member of an Extension Homemaker Club.

The fishermen tended to be grouped by category in the 4 Extension organizational areas along the coast. The Cane Belt Area (Lafourche St. Mary and Terrebonne Parishes) had over half of the full-time shrimpers (53 per cent), while the Metropolitan Area (Jefferson, Orleans, St. Bernard and St. John Parishes) had 41 per cent of the part-time shrimpers. In an aggregate sense, these same two areas had the bulk of the fishermen (81 per cent), indicating that the heavier concentrations of coastal fishermen were located along the Gulf Coast from St. Mary Parish to St. Bernard Parish.

TABLE 14. Knowledge of and Contact with Cooperative Extension by Type of Fishermen

| Knowledge and Contact with Extension | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=71 | Fishermen N=467 |
| **Knowledge of County Agent** | | | | |
| Knows him | 35 | 50 | 39 | 42 |
| Uncertain | 6 | 8 | 8 | 6 |
| Does not know him | 59 | 42 | 53 | 52 |
| | 100 | 100 | 100 | 100 |
| **Knowledge of Whom County Agent Represents** | | | | |
| Government | - | 10 | 11 | 6 |
| L.S.U. | 30 | 28 | 32 | 30 |
| Do not know | 69 | 59 | 56 | 62 |
| Farmers | 1 | 3 | 1 | 2 |
| | 100 | 100 | 100 | 100 |
| **Perceived Functions of the County Agent** | | | | |
| Assist farmers | 30 | 47 | 40 | 41 |
| Youth work | 2 | 2 | - | 2 |
| Do not know | 68 | 51 | 60 | 57 |
| | 100 | 100 | 100 | 100 |
| **Had Children in 4-H Clubs** | | | | |
| Yes | 42 | 39 | 40 | 40 |
| No | 52 | 52 | 57 | 52 |
| Don't know | 6 | 9 | 3 | 8 |
| | 100 | 100 | 100 | 100 |
| **Had Wife in Extension Homemaker Club** | | | | |
| Yes | 5 | 7 | 5 | 6 |
| No | 85 | 84 | 89 | 84 |
| Don't know | 10 | 9 | 6 | 10 |
| | 100 | 100 | 100 | 100 |
| **Extension Area in Which Located** | | | | |
| Cane Belt | 53 | 39 | 53 | 43 |
| Central Southwest | 13 | 19 | 15 | 16 |
| Eastern | 1 | 1 | 8 | 3 |
| Metropolitan | 33 | 41 | 24 | 38 |
| | 100 | 100 | 100 | 100 |

Leadership and Participation Patterns

Information was sought on the leadership and participation patterns among the fishermen as an important ingredient in designing an Extension program. Each respondent was asked to name one or more persons they considered as leaders for the fishing industry in their area. These responses were categorized and the data are presented in Table 15.

TABLE 15. Leadership and Participation Patterns by Types of Fishermen

| Leadership and Participation Patterns | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time | Part-Time | Fishermen | Fishermen |
| | N=155 | N=252 | N=85 | N=467 |
| Types of persons named as leaders in the fishing industry | | | | |
| Area fishermen | 42 | 23 | 38 | 32 |
| Fishing industry dealers | 17 | 9 | 13 | 12 |
| Professional | 14 | 5 | 11 | 9 |
| No response | 27 | 63 | 38 | 47 |
| | 100 | 100 | 100 | 100 |
| Level of membership in community organizations | | | | |
| 0--1 | 83 | 82 | 75 | 82 |
| 2 | 10 | 13 | 14 | 12 |
| 3--or more | 7 | 5 | 11 | 6 |
| | 100 | 100 | 100 | 100 |
| Membership in community organizations* | | | | |
| Civic organization | 25 | 29 | 33 | 29 |
| Religious organization | 43 | 21 | 51 | 30 |

* These figures represent only "yes" responses to each question.

In relation to the kinds of ideas, a whole array of them were mentioned and all had received only very limited acceptance among the fishermen. For the most part, the ideas involved equipment of some sort (see footnote to Table 16).

TABLE 16. Usage, Opinion and Sources of New Ideas by Type of Fishermen

| Usage, Opinion and Source of New Ideas | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Usage of new ideas* | | | | |
| Yes | 13 | 6 | 19 | 11 |
| No | 87 | 94 | 81 | 89 |
| | 100 | 100 | 100 | 100 |
| Opinion of new idea being used | | | | |
| Favorable | 11 | 4 | 15 | 9 |
| Unfavorable | 1 | 1 | 1 | 1 |
| Undecided | 1 | 1 | 3 | 1 |
| Not using | 87 | 94 | 81 | 89 |
| | 100 | 100 | 100 | 100 |
| Knowledge of new ideas being used by other fishermen* | | | | |
| Yes | 19 | 8 | 11 | 12 |
| No | 81 | 92 | 89 | 88 |
| | 100 | 100 | 100 | 100 |
| Opinion of new ideas being used by other fishermen | | | | |
| Favorable | 11 | 6 | 9 | 8 |
| Unfavorable | 7 | 2 | - | 3 |
| Undecided | 1 | - | 2 | 1 |
| Not aware | 81 | 92 | 89 | 88 |
| | 100 | 100 | 100 | 100 |

Table 16. - cont'd.

* The new ideas mentioned include using oversize boards on trawls, top and bottom fishing, wedge concept, better winches and larger nets, loran, tickle chain, new nets, traps and lures, pulling trawl from bow instead of stern, electric tickler devices, rollers on lead lines, new refrigeration systems and new type dredges.

TABLE 16. cont'd.

| Usage, Opinion and Source of New Ideas | Per Cent by Type of Fishermen: Shrimpers Full-Time N=155 | Shrimpers Part-Time N=252 | Other Fishermen N=85 | All Fishermen N=467 |
|---|---|---|---|---|
| Source of new ideas | | | | |
| Friends or neighbors | 16 | 8 | 15 | 12 |
| Relatives | 1 | 1 | - | 1 |
| Salesmen | 1 | - | - | ** |
| Mass media | 2 | 1 | - | 1 |
| Other | 3 | 1 | 5 | 2 |
| Self | - | 1 | - | ** |
| Not using or not aware | 77 | 88 | 80 | 84 |
| | 100 | 100 | 100 | 100 |
| Source of discussion of new ideas | | | | |
| Friend or neighbor | 21 | 11 | 19 | 14 |
| Relative | 1 | - | 1 | 1 |
| No one | 1 | 1 | - | 1 |
| Not using or not aware | 77 | 88 | 80 | 84 |
| | 100 | 100 | 100 | 100 |

** Less than 1/2 of 1 per cent.

The radio listening habits of the fishermen were investigated (Table 17). Radio listening habits while fishing were varied. Much higher percentages of the full-time shrimpers (40 per cent) listened to the radio regularly, compared with only 18 per cent of the part-time shrimpers and 26 per cent of the other fishermen. A large proportion (41 per cent) reported never listening to the radio while fishing, but these tended to be mainly among the part-time shrimpers (47 per cent) and the other fishermen (40 per cent). A wide range of radio stations were listened to. The data indicate clearly that the preferences were for those close to home and for the New Orleans area there was also a varied preference among a half dozen stations in that area.

TABLE 17. Radio Listening Habits by Type of Fishermen

| Radio Listening Habits | Per Cent by Type of Fishermen | | | |
|---|---|---|---|---|
| | Shrimpers | | Other | All |
| | Full-Time N=155 | Part-Time N=252 | Fishermen N=85 | Fishermen N=467 |
| Listen to Radio | | | | |
| Regularly | 40 | 18 | 26 | 24 |
| Sometimes | 34 | 24 | 26 | 26 |
| Seldom | 9 | 9 | 8 | 9 |
| Never | 17 | 47 | 40 | 41 |
| | 100 | 100 | 100 | 100 |
| Location of stations | | | | |
| New Orleans | 22 | 14 | 16 | 17 |
| Morgan City | 1 | 2 | 4 | 1 |
| Houston | 1 | - | 1 | * |
| Houma | 2 | 3 | 2 | 2 |
| Other, including C.B. | 46 | 21 | 37 | 31 |
| No response | 28 | 60 | 42 | 49 |
| | 100 | 100 | 100 | 100 |

* Less than 1/2 of 1 per cent.

## Shrimping Practices

The shrimpers were querried about the practices they utilized in their shrimping operations in order to establish a base of knowledge about the practices they utilize. These data will form an important resource in determining the kind of educational program that will be needed.

Information was procured on the type of methods used to catch shrimp. The data in Table 18 depict the degree of usage of the various methods. The most heavily used methods were the flat trawl and the balloon trawl. The flat trawl was used to the greatest extent by the part-time shrimpers (52 per cent full-time usage and 12 per cent

part-time), and the full-time shrimpers used it almost as heavily (31 per cent full-time and 27 per cent part-time). The balloon trawl, on the other hand, was used more heavily by the full-time shrimpers, with 35 per cent using it full-time and 23 per cent part-time. Butterfly nets were used to a limited extent, particularly by the full-timers. The shrimp seine was used only by a very small portion.

TABLE 18. Proportionate Use of Shrimping Methods by Time Allocation of Fishermen to Shrimping

| Proportion of Usage of Shrimping Methods | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Use of flat trawl | | | |
| None | 42 | 36 | 37 |
| Part-Time | 27 | 12 | 18 |
| Full-Time | 31 | 52 | 43 |
| | 100 | 100 | 100 |
| Use of balloon trawl | | | |
| None | 42 | 60 | 53 |
| Part-Time | 23 | 11 | 16 |
| Full-Time | 35 | 29 | 31 |
| | 100 | 100 | 100 |
| Use of butterfly nets | | | |
| None | 82 | 93 | 88 |
| Part-Time | 15 | 7 | 11 |
| Full-Time | 3 | - | 1 |
| | 100 | 100 | 100 |
| Shrimp seine | | | |
| None | 98 | 99 | 98 |
| Part-Time | 1 | 1 | 1 |
| Full-Time | 1 | - | 1 |
| | 100 | 100 | 100 |

Table 18. cont'd.

TABLE 18. cont'd.

| Proportion of Usage of Shrimping Methods | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Use of other methods | | | |
| None | 94 | 94 | 94 |
| Part-Time | 6 | 6 | 6 |
| | 100 | 100 | 100 |

As to the vessels used, data are presented in Table 19. The Lafitte Skiff was by far the most used vessel. Forty-one per cent reported using it, with more of the full-time shrimpers (45 per cent) using it than were the part-time shrimpers (38 per cent). The "V" Hull was the next boat in terms of usage, but to a much lesser extent. Thirteen per cent indicated the use of it. Numerous other types were mentioned. Wood was the predominant type of material used for construction of the boat. Sixty-four per cent reported their boats were made of wood, with 79 per cent of the full-time shrimpers and 54 per cent of the part-timers giving this response. For the part-timers (41 per cent), fiberglass was the second leading material, while for the full-timers (13 per cent), steel was in the same position.

The horsepower ratings varied widely. Practically all of the full-time shrimpers used motors with over 70 horse-power ratings, while one-third of the part-timers used motors that were below this range. To illustrate the differences, the median horse-power rating for full-timers was 231.7, while for part-timers it was 128.0. Almost one-fourth of the full-timers utilized motors in the over 350 horse-power category.

For the most part, the part-timers used gasoline engines (90 per cent), while a substantial portion of the full-timers (69 per cent) use diesel fuel.

TABLE 19. Characteristics of the Vessel Used by Time Allocation of Fishermen to Shrimping

| Characteristics of the Vessel Used | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Vessel design | | | |
| Lafitte Skiff | 45 | 38 | 41 |
| V-Hull | 8 | 17 | 13 |
| Tri-Hull | 4 | 6 | 5 |
| Deep Sea Trawler | 8 | 1 | 3 |
| Other types | 35 | 38 | 38 |
| | 100 | 100 | 100 |
| Material of vessel | | | |
| Wood | 79 | 54 | 64 |
| Fiberglass | 4 | 41 | 27 |
| Steel | 13 | 2 | 6 |
| Aluminum | 4 | 3 | 3 |
| | 100 | 100 | 100 |
| Horsepower rating | | | |
| 10--70 | 3 | 33 | 20 |
| 71--150 | 25 | 38 | 33 |
| 151--250 | 35 | 19 | 26 |
| 251--350 | 15 | 5 | 9 |
| Over 350 | 22 | 5 | 12 |
| | 100 | 100 | 100 |
| Type of fuel used | | | |
| Diesel | 69 | 10 | 33 |
| Gas | 31 | 90 | 67 |
| | 100 | 100 | 100 |
| Size of boat (footage) | | | |
| 12--20 | 4 | 60 | 37 |
| 21--40 | 47 | 37 | 41 |
| 41--60 | 34 | 3 | 16 |
| Over 60 | 15 | - | 6 |
| | 100 | 100 | 100 |

As one would expect from the preceding data, the size of the boats also varied widely. The median size for the full-timers was 38.4 feet, compared with 22.0 feet for the part-timers. Sixty per cent of the part-timers had boats in the 12--20 foot range, while 47 per cent of the full-timers had boats in the 21--40 feet range and 34 per cent were in the 41--60 feet range. Fifteen per cent of the full-timers were in the over 60 feet category.

Crew members were utilized by less than half of the shrimpers (Table 20). Fifty-nine per cent of the total sample reported having no crew members, with three-fourths of the part-timers giving this response. Much larger proportions of the full-timers as compared with all part-timers utilized all categories of crew members. Thirty-two per cent of the full-timers used one crew member, 28 per cent used two, and 10 per cent used more than two. For the part-timers, 18 per cent used one and 7 per cent used two or more. For those who did use crew members, a share of the catch was by far the main method of payment. Thirty-three per cent were paid by this method, while only 6 per cent used other methods.

When querried about the problems in obtaining crewmen, only 15 per cent reported having problems usually or sometimes. It was much more frequent among full-timers (31 per cent), compared with part-timers (4 per cent).

TABLE 20. Characteristics of the Crew by Time Allocation of Fishermen to Shrimping

| Crew Characteristics | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Number of crewmen | | | |
| None | 30 | 75 | 59 |
| One | 32 | 18 | 23 |
| Two | 28 | 6 | 14 |
| More than 2 | 10 | 1 | 4 |
| | 100 | 100 | 100 |
| Method of payment of crew | | | |
| Share of catch | 54 | 21 | 33 |
| Wage | 6 | 1 | 3 |
| Other | 6 | 3 | 5 |
| No crew | 30 | 75 | 59 |
| | 100 | 100 | 100 |
| Problems in obtaining crewmen | | | |
| Usually | 17 | 2 | 8 |
| Sometimes | 14 | 2 | 7 |
| Seldom | 14 | 2 | 6 |
| Never | 43 | 54 | 50 |
| No response | 12 | 40 | 29 |
| | 100 | 100 | 100 |

The shrimpers fished inshore for the most part (Table 21). Almost three-fourths (74 per cent) shrimped mostly in-shore and 11 per cent were mixed in the location of their shrimping efforts. From a comparison viewpoint, more of the full-timers (30 per cent) shrimped off-shore generally as compared with the part-timers (8 per cent). Eighty-five per cent of the part-timers and 57 per cent of the full-timers were basically in-shore shrimpers. In relation to

sources, 81 per cent reported past experience as the principal means for determining location, and 44 per cent indicated reports from other fishermen as a source. Three per cent indicated the Louisiana Wild Life and Fisheries Commission and 12 per cent said strictly random. The differences between the two groups were minimal, except that more part-timers (49 per cent) relied on other fishermen than did full-timers (35 per cent).

TABLE 21. Location of Shrimping Efforts by Time Allocation of Fishermen to Shrimping

| Location of Shrimping Area | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Sources for determining location* | | | |
| Past experience | 83 | 80 | 81 |
| Other fishermen | 35 | 49 | 44 |
| LWFC | 3 | 2 | 3 |
| Strictly random | 13 | 12 | 12 |
| Proportion of in-shore--off-shore fishing | | | |
| Mostly in-shore | 57 | 85 | 74 |
| Mixture | 13 | 7 | 11 |
| Mostly off-shore | 30 | 8 | 15 |
| | 100 | 100 | 100 |

* The respondents were able to indicate more than one response so the figures do not equal 100 per cent.

Factors related to the handling of the catch are presented in Table 22. Quite a different pattern emerged in the storage of shrimp on vessel. An ice hold was the method used by 50 per cent of the

full-timers, compared with only 14 per cent of the part-timers. Ice chests, on the other hand, were used much more frequently by the part-timers (82 per cent) than they were by the full-timers (39 per cent). Refrigeration units were used by only 4 per cent of the full-timers and 2 per cent of the part-timers. Most of them, 88 per cent of both groups, sorted trash fish by hand. Only a small proportion (4 per cent) of the total sample used the salt barrel technique. By and large, trash fish were disposed of by throwing them overboard, with 76 per cent of the full-timers and 55 per cent of the part-timers giving this response. Forty-one per cent of the part-timers, however, reported using trash fish at home.

TABLE 22. Handling of Shrimp, Trash Fish and Crabs by Time Allocation of Fishermen to Shrimping

| Handling of Shrimp, Trash Fish and Crabs | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Storage of shrimp on Vessel | | | |
| Ice hold | 50 | 14 | 28 |
| Ice chest | 39 | 82 | 65 |
| Refrigeration unit | 4 | 2 | 3 |
| Hampers or tubs | 7 | 2 | 4 |
| | 100 | 100 | 100 |
| Disposal of trash fish | | | |
| Thrown overboard | 76 | 55 | 64 |
| Home use | 12 | 41 | 29 |
| Sell marketable fish | 12 | 4 | 7 |
| | 100 | 100 | 100 |

Table 22. cont'd.

TABLE 22. cont'd.

| Handling of Shrimp, Trash Fish and Crabs | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Technique for sorting | | | |
| By hand | 88 | 88 | 88 |
| Salt barrels | 7 | 2 | 4 |
| Trough | 1 | 8 | 5 |
| Sorting box | 1 | 2 | 2 |
| Other | 3 | - | 1 |
| | 100 | 100 | 100 |
| Days Spent Out of Port | | | |
| One | 37 | 84 | 65 |
| Two--five | 27 | 15 | 20 |
| Six--ten | 18 | 1 | 8 |
| Eleven and over | 18 | - | 7 |
| | 100 | 100 | 100 |

In terms of days spent out of port, the part-timers (84 per cent) did their shrimping on a one-day basis, going in and out the same day. The full-timers as a contrast were varied. Thirty-seven per cent reported one day, while 27 per cent said two days and 18 per cent each reported 6 to 10 and 11 days and over for the days spent out of port.

As to marketing of the shrimp catch, quite a different pattern emerged when the shrimpers were compared by time allocation (Table 23). The full-timers (91 per cent) basically marketed their catch through a local dealer or agent as contrasted with the part-timers who showed a diverse pattern. Forty-five per cent of the part-timers used their catch at home, 29 per cent sold through a dealer or agent and 20 per cent marketed their catch through community patrons of one

sort or another. Only 4 per cent sold their catch through roadside stands and only 1 per cent marketed through a cooperative. When querried about the prices received for their catches, over half (58 per cent) reported that they were fair most of the time, with 76 per cent of the full-timers and 46 per cent of the part-timers reporting this opinion. Since 45 per cent of the part-timers did not sell shrimp, it was clear that a preponderant number felt good about price. It is important, however, to point out that the study was conducted at a time of very favorable prices for shrimp.

TABLE 23. Marketing of Shrimp Catch by Time Allocation of Fishermen to Shrimping

| Marketing of Shrimp Catch | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Primary Marketing Outlet | | | |
| Dealer or agent | 91 | 29 | 50 |
| Home usage | - | 45 | 30 |
| Community patrons | 7 | 20 | 15 |
| Roadside stand | 2 | 5 | 4 |
| Cooperative | - | 1 | 1 |
| | 100 | 100 | 100 |
| Opinions about the Fairness of the Price | | | |
| Most of the time | 76 | 46 | 58 |
| Some of the time | 19 | 6 | 11 |
| Seldom or never | 5 | 3 | 4 |
| Do not sell | - | 45 | 27 |
| | 100 | 100 | 100 |

The shrimpers were asked to indicate the source of repair for damaged nets and these responses are summarized in Table 24. Two responses were given basically, self and custom shop. The majority (61 per cent) of the total sample indicated self, and the remainder (31 per cent) reported using a custom shop. The differences among the full-timers and part-timers were not pronounced.

TABLE 24. Source of Net Repairs by Time Allocation of Fishermen to Shrimping

| | Per Cent by Time Allocation | | |
|---|---|---|---|
| Source of Repairs | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Self | 65 | 59 | 61 |
| Crew | 4 | - | 2 |
| Custom shop | 29 | 32 | 31 |
| Friend or relative | 2 | 9 | 6 |
| | 100 | 100 | 100 |

A series of questions were posed to ascertain the opinions of shrimpers with regard to selected aspects of the shrimping industry and these data are presented in Table 25. Concerning opinion of the brown shrimp management practices, the responses tended to be favorable. Over one-half (52 per cent) of the respondents gave this response, and more of the full-timers (62 per cent) gave this response as compared with the part-timers (46 per cent). Almost one-third (29 per cent) were unfavorable, with about equal numbers of both groups feeling this way. About one-fourth (24 per cent) of the part-timers were undecided.

TABLE 25. Selected Attitudes toward Shrimping by Time Allocation of Fishermen to Shrimping

| Selected Attitudes | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Opinion of Brown Shrimp Management Practices | | | |
| Favorable | 62 | 46 | 52 |
| Unfavorable | 29 | 30 | 29 |
| Undecided | 9 | 24 | 19 |
| | 100 | 100 | 100 |
| Suggestions for Improving Shrimp Season | | | |
| Open season earlier | 11 | 13 | 12 |
| Open season later | 7 | 10 | 9 |
| Adjust seasons | 17 | 14 | 15 |
| Enforce laws | 18 | 6 | 11 |
| Restrict fishing in certain areas | 5 | 4 | 4 |
| More technical assistance | 9 | 7 | 8 |
| Outlaw butterflying | 1 | 1 | 1 |
| No suggestions | 32 | 45 | 40 |
| | 100 | 100 | 100 |
| Problems Encountered | | | |
| Obstructions | 33 | 28 | 30 |
| Locating shrimp | 8 | 4 | 4 |
| Poor shrimp crop | 8 | 5 | 7 |
| Contamination | 3 | 4 | 4 |
| Other | 8 | 11 | 10 |
| None | 40 | 48 | 45 |
| | 100 | 100 | 100 |
| Trends in Shrimp Crop | | | |
| Increasing | 9 | 11 | 10 |
| Decreasing | 51 | 43 | 46 |
| About the same | 39 | 39 | 39 |
| No opinion | 1 | 7 | 5 |
| | 100 | 100 | 100 |

Table 25. cont'd.

TABLE 25. cont'd.

| Selected Attitudes | Per Cent by Time Allocation | | |
|---|---|---|---|
| | Full-Time N=155 | Part-Time N=252 | Total N=407 |
| Trends in Effort Needed to Catch Shrimp | | | |
| More | 56 | 45 | 49 |
| Less | 22 | 16 | 18 |
| About the same | 20 | 29 | 26 |
| No opinion | 2 | 10 | 7 |
| | 100 | 100 | 100 |
| Suggestions for Improving Income | | | |
| Improved markets | 12 | 2 | 6 |
| Adjustment of seasons | 20 | 12 | 15 |
| Enforcement of laws | 14 | 7 | 10 |
| Learning to locate shrimp | 8 | 6 | 7 |
| Improved technology and equipment | 6 | 6 | 6 |
| Others | 11 | 6 | 8 |
| No suggestions | 29 | 61 | 48 |
| | 100 | 100 | 100 |
| Reaction to Limited Shrimping Licenses to a Set Figure | | | |
| Favorable | 28 | 15 | 20 |
| Unfavorable | 62 | 71 | 68 |
| Undecided | 10 | 14 | 12 |
| | 100 | 100 | 100 |

In terms of problems encountered, obstructions were by far the most frequently mentioned. Thirty per cent of all of the shrimpers gave this response, while 45 per cent reported no problems. As to suggestions for improving the shrimp season, a number were mentioned. The more frequently mentioned by the total sample were adjust the

seasons (15 per cent), open the season earlier (12 per cent), open the season later (9 per cent), enforce the laws (11 per cent) and more technical assistance (8 per cent). The data indicate a great deal of concern with the timing of the shrimping season, and the opinions about it were diverse.

Almost half of the shrimpers (46 per cent) felt that the shrimp crop was decreasing over time and over one-third (39 per cent) felt that it was about the same. The differences among the full-timers and part-timers were not marked. As a corollary, when querried about the effort needed to catch shrimp, just about half (49 per cent) indicated more effort was needed now as compared with earlier years and 26 per cent reported that it was about the same. Differences between the two groups were slight. The two sets of responses, the quantity of shrimp being caught and the effort needed to catch them, closely paralled each other, particularly the responses indicating that less shrimp were available and more effort was needed to catch them.

Regarding suggestions for improving income of shrimpers, a number of responses were given. The more frequently mentioned included adjustment of seasons (15 per cent), enforcement of laws (10 per cent), learning to locate shrimp (7 per cent), improved markets (6 per cent) and improved technology and equipment (6 per cent). Suggestions were forthcoming much more frequently from the full-timers as compared with the part-timers. Seventy-one per cent

of the full-timers made a suggestion, while only 39 per cent of the part-timers did so.

Reactions to the concept of limited entry were generally unfavorable, surprisingly enough. Over two-thirds of the total sample (68 per cent) were against limiting the number of shrimping licenses to a set figure, and more of the part-timers (71 per cent) give this response than did the full-timers (62 per cent). Only 20 per cent were favorable to the idea, and 28 per cent of the full-timers and 15 per cent of the part-timers were in this category.

Other Fishing Practices

This section presents data on the practices used by crabbers, oysters and commercial fishermen. For the purposes of the study, no comparisons were made in this section since the main idea was to establish a benchmark of the practices being utilized by these fishermen at the time of the study.

The crab fishermen constituted only a small proportion of the total sample (Table 26). Only 24 respondents were selected for interview. The data indicated that most of the crabbers (92 per cent) used traps to catch crabs, and fish (83 per cent) was the principal source of bait. Almost two-thirds (64 per cent) marketed their crabs through dealers, while the remaining proportion marketed the crabs themselves. One-third of the group cultured soft-shell crabs, and only 17 per cent utilized hired labor. By far the most important problem they reported was people stealing or running their traps for them, with 70 per cent indicating it as one of the two major problems they faced. Only

21 per cent were full-time crabbers.

TABLE 26. Selected Items on Crab Fishermen

| | N=24 Per Cent |
|---|---|
| Methods Used* | |
| Traps | 92 |
| Bait lines | 13 |
| Scoop nets | 13 |
| Other | 13 |
| Bait Used* | |
| Fish | 83 |
| Beef lips | 8 |
| Other | 13 |
| Marketing Outlet | |
| Dealer | 64 |
| Self | 36 |
| | 100 |
| Cultured Soft Shell Crabs | |
| Yes | 33 |
| No | 67 |
| | 100 |
| Number of People Employed | |
| None | 83 |
| One or more | 17 |
| | 100 |
| Problems Encountered* | |
| Stealing or running of traps | 70 |
| Replacing traps | 16 |
| Limited fishing areas | 8 |
| Unreliable weather forecasts | 12 |
| Rough water killing crabs in traps | 17 |
| Pollution | 16 |
| Time Commitment | |
| Full-Time | 21 |
| Part-Time | 89 |
| | 100 |

* More than 100 per cent.

Data on the oystermen are presented in Table 27. There were only 16 respondents in the sample who were oystermen. As to methods used, three-fourths reported the use of dredges to bring up oysters. The type of boat varied. Thirty-one per cent each reported using skiff-type luggers or flat bottom boats, while 19 per cent each indicated the use of trawl-type luggers or Lafitte Skiffs. Half of the boats were 41 feet or longer, while 44 per cent were in the 21--40 feet category. A large proportion used crewmen. Fifty-seven per cent reported two or more crewmen and 12 per cent used one. The acreage cultivated ranged from under 200 acres (38 per cent) to over 400 acres (38 per cent). Sizeable proportions planted oyster beds this past year, with 35 per cent planting over 350 acres, and an equal number planting under 20 acres. The three problems most frequently mentioned included lack of fresh water management (37 per cent), the presence of snails and other pests (26 per cent) and pollution (31 per cent). Last year 28 per cent harvested over 20,000 sacks of oysters and 44 per cent harvested between 5,000 to 20,000 sacks. Only 27 per cent were full-time oystermen.

TABLE 27. Selected Items on Oystermen

| | N=16<br>Per Cent |
|---|---|
| Methods Used | |
| Scrapers | 6 |
| Tongs | 13 |
| Dredges | 75 |
| Other | 6 |
| | 100 |

Table 27. cont'd.

TABLE 27. cont'd.

| | N=16<br>Per Cent |
|---|---|
| Type of Boat | |
| Lugger-skiff type | 31 |
| Lugger--trawl | 19 |
| Lafitte skiff | 19 |
| Flat bottom | 31 |
| Size of Boat (feet) | |
| 12--20 | 6 |
| 21--40 | 44 |
| 41--60 | 50 |
| | 100 |
| Number of Crew | |
| None | 31 |
| 1--2 | 12 |
| 3 or more | 57 |
| | 100 |
| Acreage Cultivated | |
| Under 200 | 38 |
| 200--400 | 24 |
| Over 400 | 38 |
| | 100 |
| Acreage Planted Past Year | |
| Under 20 | 35 |
| 21--80 | 22 |
| 81--350 | 8 |
| Over 350 | 35 |
| | 100 |
| Problems Encountered* | |
| Lack of fresh water management | 37 |
| Lack of seed oysters | 13 |
| Snails and other pests | 26 |
| Marketing | 12 |
| Securing lease land | 13 |
| Pollution | 31 |

Table 27. cont'd.

* More than 100 per cent.

TABLE 27. cont'd.

| | N=16 Per Cent |
|---|---|
| Harvest Last Year (Sacks) | |
| Under 5,000 | 28 |
| 5,000--20,000 | 44 |
| Over 20,000 | 28 |
| | 100 |
| Time Commitment | |
| Full-Time | 27 |
| Part-Time | 73 |
| | 100 |

As to the commercial fishermen, they too were few (31 respondents). The data are presented in Table 28. The type of fish caught varied widely. Among the more popular species caught were catfish (48 per cent), trout (35 per cent) and red fish (35 per cent). The hook and line was by far the most used method. Seventy-four per cent reported using hooks and lines. The two most widely used boats were of the vee-tri-double hull type (29 per cent) and the bateau (26 per cent). Boat sizes were under 20 feet for the most part, with 80 per cent falling into that category. Ice chests (57 per cent) and live boxes (27 per cent) were most frequently mentioned as means of storing fish on board the vessel. Dealers (51 per cent) and home use (33 per cent) were the major sources for outlets for the catch. Only 10 per cent reported the use of fish-finding aids. Among the major problems reported were the weather (19 per cent), other boats (16 per cent), locating fish (16 per cent) and snagging lines (16 per cent).

TABLE 28. Selected Items on Commercial Fishermen

| | N=31 Per Cent |
|---|---|
| Type of Fish Caught* | |
| Catfish | 48 |
| Perch | 13 |
| Sac-a-lait | 13 |
| Croakers | 19 |
| Trout | 38 |
| Redfish | 35 |
| Flounder | 13 |
| Drum | 13 |
| Other | 24 |
| Methods Used* | |
| Twin Gill Net | 13 |
| Monofilament Gill Net | 6 |
| Trammel Net | 3 |
| Hook and line | 74 |
| Others | 38 |
| Type of Boat | |
| Vee-Tri-Double Hull | 29 |
| Lafitte skiff | 7 |
| Flat bottom | 19 |
| Bateau | 26 |
| Other | 19 |
| | 100 |
| Size of Boat (feet) | |
| Under 20 | 80 |
| 21--40 | 10 |
| 41 and over | 10 |
| | 100 |
| Methods of Storing Fish on Boat | |
| Ice chest | 57 |
| Live box | 27 |
| Refrigeration | 13 |
| Ice in hole | 3 |
| | 100 |
| Number of Crewmen | |
| None | 71 |
| One | 13 |
| Two or more | 16 |
| | 100 |

Table 28. cont'd.

* More than 100 per cent.

TABLE 28. cont'd.

| | N=31<br>Per Cent |
|---|---|
| Marketing Outlet | |
| Dealer | 51 |
| Cooperative | 3 |
| Self | 13 |
| Home use | 33 |
| | 100 |
| Use of Fish-Finding Aids | |
| Yes | 10 |
| No | 90 |
| | 100 |
| Problems Encountered* | |
| Other boats | 16 |
| Locating fish | 16 |
| Snagging lines | 16 |
| Poaching | 10 |
| Locating nets | 10 |
| Weather | 19 |
| Shocking fish | 10 |
| Others | 13 |

* More than 100 per cent.

## SUMMARY OF THE FINDINGS

The coastal fishermen tended to be middle-aged, have a low level of education and live in a rural area. They had been fishing for a good while, the fishing business was self-owned, and it was either a one-man operation or one crewman was employed. Self-reliance was a watchword, exemplified by the fact that many owed nothing on their boats, carried no insurance, mistrusted cooperatives and did not name leaders among the fishermen. These are generalizations, of course, which were not true in every instance, but they did provide a characterization of the kinds of individuals which must be dealt with in the implementation of the Extension concept among fishermen.

Most fishermen had not heard of the Sea Grant program, and, consequently, were not able to express attitudes clearly toward it. They tended to feel that an Extension Agent in fisheries could be useful, but they were not necessarily clear about what he could do for them. Quite a few had had contact with Cooperative Extension, more often than not through their children as 4-H Club members, and knew of the County Agent. They generally identified him as a person who worked with farmers. At the time of the study, no substantial change had been made in their fishing operations in recent history. The few new ideas which had been adopted were very diverse, and indicated that no concerted efforts had been made to introduce new ideas among the fishermen. The pattern of change among the fishermen indicated that their adoption behavior was normal, following a

similar pattern to that described by Rogers[1] as the "trickle-down process." At first a few innovative individuals adopt, followed by some early adopters, then by widespread adoption. Locally respected individuals, normally friends and neighbors, play a key role in this process. The pattern exhibited thus far seems to follow this rationale, although no one idea has yet received wide-scale adoption. Local fishermen were generally listed as leaders, and friends and neighbors were usually listed as sources of information and problem discussion.

The part-time fishermen, however, presented a different picture to some extent. About half of them could be described as hobbyists since they spent very little time at fishing and reported little or no sales of fishery products. They seemed little interested in Sea Grant, Extension efforts, or in what happened to the industry outside of their own immediate efforts which were either pleasure-oriented or aimed at partially producing their own food supply.

The attitudes and opinions of the fishermen were quite varied in regard to selected topics about the fishing industry. They expressed wide variations in opinions about coastal zone management, were negative about cooperatives, and expressed reservations about the effectiveness of enforcement of fishing laws and regulations. The full-timers generally had negative opinions about sport fishermen.

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[1]Everett M. Rogers and F. Floyd Shoemaker, Communications of Innovations: a Cross-Cultural Approach, Second edition (New York: The Free Press, 1971).

The shrimpers were generally favorable about brown shrimp management, felt good about the price of shrimp, and expressed reservations about limited entry. The shrimp season dates evoked a very wide response and brought forth all kinds of responses, indicating that there was no unanimity of opinion about this matter. Obstructions were generally listed as a major problem by all kinds of fishermen.

The full-time shrimpers, for the most part, were small operators who fished inshore. They used a flat or balloon trawl, their boat was a Lafitte skiff of about 30 feet and made of wood, with a diesel engine of over 200 horse-power. They selected their shrimping location from past experience and from reports from other shrimpers. Shrimp were stored in an ice hold, trash fish was thrown overboard and trips out of port were of short duration. Local dealers were their principal market source, and they repaired their own nets.

The crabbers and commercial fishermen were small operators for the most part. The oystermen, on the other hand, were large operators. Their operations were extensive, with dredges used for harvesting oysters, and large boats were the general rule.

## IMPLICATIONS FOR EXTENSION WORK

Based on the findings of this study augmented by the researcher's experience with Extension work, a number of implications seem apparent for the development of the extension education delivery mechanism as a part of the Sea Grant program.

1. The typical coastal fishermen in many ways seems much like the farmer of a generation or two ago: individualistic, self-

reliant, in business for a long time, somewhat behind the larger society in education, and on the ~~other~~ older side. The fishermen knows about, and to some extent through his family he has had contact with the Cooperative Extension Service. He seems to respect the agency; at least he has no built-in biases and prejudices which would make working with him difficult. It would seem, therefore, that it would be simpler and more efficient to use the already operating structure of Cooperative Extension as a vehicle for Extension work with fishermen.

2. The fishermen know little about the Sea Grant effort of the University. The cooperative nature of the Extension activity must be emphasized so that a clearer picture emerges in the minds of the fishermen of the roles of the respective agencies.

3. A broad-scale, comprehensive adult education program seems to be called for. The practices and problems of the fishermen are varied and encompass many facets of science. In addition, there are some attitudes which will need changing before some significant goals can be reached; e.g., implementation of the coastal zone management concept. The fishermen need new knowledge in order to progress, and they must be reached with a practical program in his own environment.

4. The extensive use of specialist-type individuals will be a

necessity in order to mount and support this broad-scale educational program, and these individuals will need to be brought in from three major sources:

a. Cooperative Extension - specialists in communications, economics, engineering, environmental management and protection, extension education methodology, management, marketing, recreation and wildlife.

b. Sea Grant - specialists in coastal zone management, economics, engineering, fisheries technology, food science, geo-science, law, marine sciences, sociology and zoology.

c. Louisiana Wild Life and Fisheries Commission - specialists in fisheries, oyster and shrimp technology.

5. The utilization of an area Extension Agent working in several parishes appears to be the best way to reach the fishermen directly with an educational program. The agent should be indigeneous to the area, if at all possible, and he should be not only well grounded theoretically in the general area of fisheries technology, but he should have practical experience, particularly in shrimping. Being able to speak the lingua franca also would be a definite asset.

6. At least four Area Extension Agents would be needed in order to adequately cover the coastal areas with an extension education program. These areas are as follows:

a. Area 1 - Cameron, Iberia and Vermilion Parishes.

b. Area 2 - Lafourche, St. Mary and Terrebonne Parishes and Grand Isle.

c. Area 3 - Jefferson, Plaquemines, St. Charles and St. John Parishes.

d. Area 4 - Livingston, Orleans, St. Bernard, St. Tammany and Tangipahoa Parishes.

Considered geographically from Cooperative Extension's organizational structure and from the number of fishermen, this would seem a reasonable way to organize the program. The range per agent as to the number of licensed fishermen would be from about 1,200 to 3,000.

7. The traditional educational approaches of Cooperative Extension appear likely to be effective. The Area Extension Agent in fisheries, supported by parish Extension Agents, should utilize time-tested procedures for program development, including the use of local advisory groups to plan programs. He should follow the practice of bringing educational experiences directly to people in their practical, everyday work experience, emphasizing the usefulness of new ideas to their livelihood. As a beginning point, especially, problems which concern local people are an excellent means of developing enthusiasm and support for the program. Local leaders and local groupings should be involved as much as possible in the process since they aid the diffusion process immeasurably. In short, the time-honored approach of a strong

positive program, forcefully led, but locally acceptable, should prove effective.

8. Evaluation of the initial efforts will be particularly crucial. The effects of the program must be continually assessed, because if the initial judgements prove erroneous in any way, adjustments must be made quickly, otherwise irreparable harm to the program may be done among the local populace. The general climate in which the work is done must be cultivated so that the program is not only respected but trusted to provide an unbiased, practical approach to the solution of problems and the provision of new knowledge.

9. Coordination and communication among the various groups will be a problem for a number of reasons, principally because of the fact that at least three different organizational units are involved which have no formal structural ties. It would seem reasonable, therefore, that within the University framework a person should be appointed to serve as the leader of the Extension effort. This person should be on a joint appointment in the Cooperative Extension Service and in the Center for Wetlands Resources. He would be equally responsible to the Directors of both units. This would enable him to move freely within both organizations, marshaling resources, facilitating communications and achieving coordination for the program. At least quarterly,

representatives of both groups should meet with the agent, his supervisor, the program leader and other interested persons to review progress and plan further activities.

10. A close tie will also be necessary with the Louisiana Wild Life and Fisheries Commission. Effective working relationships would be highly beneficial in order to establish mutually supporting programs and to avoid duplication of effort. The staff of the Commission has much to offer in terms of technological expertise and this knowledge should be utilized expeditiously.

11. The Area Extension Agents should be an integral part of the on-going Cooperative Extension organizational structure, assigned for supervision purposes to the supervisor of the area in which he is located. As such, he would be a part of the area staff, able to call on any of the other staff for support and assistance. He could also be housed and supported by local facilities.

12. Last but not least, the fundamental base to any Extension effort is knowledge. Without applied research and without appropriate "knowledge packages" in the form of recommended practices, an extension education effort is futile. The Sea Grant "knowledge center" must continue to monitor problems and generate knowledge in order to ensure an adequate base of information for an extension education program and this knowledge must find its way efficiently into the Extension system so that the transfer process can take place.

## REFERENCE CITED

Rogers, Everett M. and F. Floyd Shoemaker. Communication of Innovation: a Cross-Cultural Approach. Second edition. New York: The Free Press, 1971.