

## SOME PROBLEMS OF THE SHRIMP INDUSTRY

William W. Anderson  
Chief, Gulf Investigations, U. S. Fish & Wildlife Service

The shrimp is the most valuable fishery resource of the South Atlantic and Gulf area and is of major importance in every coastal state from North Carolina to Texas.

This fishery has experienced a history of very rapid expansion within a relatively short period. Before about 1912 to 1915 the most efficient gear for catching shrimp was the haul seine and the annual catch was only about 20,000,000 pounds. Somewhere between 1912 and 1915 the otter trawl was introduced and by 1917 had become the standard commercial gear. Introduction of the trawl completely revolutionized the shrimp industry, opening up entirely new grounds and leading to a rapid expansion of the fishery. As a consequence the catch had increased to about 50,000,000 pounds in 1918 and to about 160,000,000 in 1945.

Although several species of shrimp are utilized commercially, one, the common shrimp, *Penaeus setiferus*, is outstandingly the most important and accounts for at least 95% of the total catch.

At present we believe the shrimp industry is utilizing all of the major shrimp grounds that are available along the South Atlantic and Gulf Coasts of the United States. Consequently the industry cannot look forward to new and untapped concentrations of common shrimp such as those which have allowed such a rapid expansion in the past. Apparently the fishery has now reached about the maximum production that can be obtained under the present methods of operation, and we can expect a fluctuation of total catch around the present amount of production.

There are many problems that might be mentioned in connection with the shrimp industry, but for the present discussion I will undertake to cover but three which seem to be of major importance.

For a number of years there has been increasing evidence that the shrimp industry has been building new vessels and improving the efficiency of old ones to a point where the law of diminishing returns per unit has begun to hurt. As an example, let us consider the case in Louisiana, where two-thirds of the shrimp production of the South Atlantic and Gulf is taken. By 1939 the annual catch in this state was about 100,000,000 pounds and has been fluctuating up and down from this figure in succeeding years. During this period new vessels have been added to the fleet at a rapid rate with the trend to larger vessels with increased fishing ability, both for inside and offshore fishing. In addition to this rapid expansion of the fleet another factor was introduced as a result of war conditions. Before the last war a large percentage of the hundreds of small luggers used for fishing the inside waters were powered with old automobile engines. These engines were not very efficient and the trawls they could haul were relatively small. However, during the war years it was impossible to buy parts for or replace these motors and as a result they were replaced by new marine engines of increased power and efficiency. This process allowed hundreds of small vessels to employ much larger nets which at the same time could be hauled at greater speed. The end result was a muchly increased fishing effort which in effect had the same result as adding additional boats to the fleet. Putting together the large number of new vessels and the increased efficiency of old vessels, the fishing pressure in Louisiana had been increased in a large measure. However, the total catch has not gone up in proportion and we are

merely dividing the annual production amongst an ever increasing number of units, for the industry is continuing to build vessels at a rather rapid rate.

One might ask how it has been possible to operate vessels profitably under these conditions. The answer apparently lies in the rapid increase in the price of shrimp. During the early part of 1940 the price paid to fishermen for jumbo shrimp was about \$10 per barrel. The price rose steadily until at the time OPA ceilings were imposed a couple of years later the price had reached \$30 per barrel and remained at about this figure during the period of OPA restrictions. When these price ceilings were lifted the price of shrimp began to rise again until at present jumbo shrimp are worth some \$60 to \$70 a barrel to the fishermen. Smaller sizes of shrimp bring less but the price has increased in a comparable manner. This is one method to offset the reduced catch of the individual vessel and the resulting increased cost of production. However, there is a limit to the amount the consumer will pay for shrimp and already there appears to be difficulty in moving large quantities of shrimp at these high prices.

Since a smaller number of vessels could no doubt harvest the crop with less effort it would seem an unwise procedure to continue increasing the number of vessels in the fishery.

An example of the efforts of the industry to put some of their vessels to more profitable use is seen in the great interest shown in the shrimp grounds lying across the Gulf of Mexican waters in the Bay of Campeche. Operations in these Mexican waters are beset with many difficulties and probably would not be undertaken if the vessels could catch more shrimp in our own waters. Also many of the shrimp trawlers are leased to oil companies for various purposes in order to supplement their income, especially in seasons of slack production.

The common shrimp is a species with a very short life span. Judging from presently available information it is evident that they do not live much beyond 18 or 20 months and that the percentage of shrimp over a year old in the fishery is insignificant when compared to the population as a whole. Therefore, as far as the fishery is concerned, the common shrimp is an annual. This being true the industry, in order to take full advantage of the resource, must harvest the maximum poundage possible each year while leaving sufficient spawners to repopulate the fishery.

The fishery now tends to be divided into two general sections: the inshore fishery carried on by the smaller boats in the inside waters and along the beaches; and the offshore fishery carried on by the larger vessels almost entirely in outside areas.

The inside waters are the nursery grounds. Consequently, when the small shrimp of the year first appear in the fishery it is on the inside grounds. From there the young shrimp, as they grow, move to the outside waters. As a result we have, in general a gradation in size of shrimp from the inside to the outside waters with the largest shrimp in the outside waters. Under such conditions the inside fishery begins the harvest and the outside fishery has available only that portion of the population which escapes the inside operations.

At present we believe the best means of increasing the total poundage of shrimp lies in more efficient harvesting of the annual crop. This involves taking advantage of the rapid growth of shrimp and catching more of the larger ones and less of the smaller. To do this the fishing effort must be shifted in intensity from those areas and during those seasons where small shrimp are predominant to those where larger shrimp are predominant.

This may sound like a simple procedure but actually it is not, owing mainly to the nature of the industry. In all sections of the fishery, and particularly in Louisiana, there are a large number of small vessels that are not capable of operating except in the inside or inshore waters. Proposed restrictions on fishing in these waters are usually met by serious objections from this section of the fishery as a threat to their livelihood.

There are no doubt many persons engaged in the industry who realize the advantage of catching the larger sizes of shrimp which are much easier and less expensive to handle and which bring the biggest price. At the same time we continue to take vast amounts of small shrimp despite the fact that the more of these that are caught the less of the more desirable large shrimp will be available.

The common shrimp spawn in the open ocean or Gulf and the young are carried by favorable currents to the inside waters which are the nursery grounds. Here they live and grow for a period before migrating to outside waters. We believe that the number of openings to the outside waters and the extent of favorable nursery grounds are two of the major physical factors influencing the production of shrimp in the various sections of the fishery. Hence, Louisiana which has a combination of more passes and a vastly larger inland water area landward of these passes than any other state, produces the greatest poundage of shrimp.

With the industrialization of much of our coastal area there is the ever present threat that large areas of these nursery grounds for shrimp, and other species, may become unsuitable. Such a situation would result in less nursery ground area than these species now have available and lead to a reduction of catch, because these inside areas are necessary for the early development of the shrimp as well as for various other species.

In addition to the threat of direct pollution, such areas are undergoing changes brought about by the dredging of numerous waterways through the coastal area. Just what effect this may eventually have we do not know at this time. But any drastic change in this environment may be detrimental to many species.