

THE FUTURE OF TEXAS FISHERIES

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While no one is more interested in the topic of "The Future of Texas Fisheries", than myself, nevertheless to do justice to the subject would take an ability, which I do not possess, of successful foresight. All I can attempt to do is to point out what seems to me significant trends, and to offer a few suggestions.

Texas has what amounts to a one-fish fishery--shrimp. This crustacean accounts for about 70% of our annual production of around 22,000,000 pounds. Trout, redfish, and drum furnish roughly 15%; redsnapper around 6%; oysters 5%; and the remaining 4% is accounted for by miscellaneous species, of which flounder is the most important.

While there is no evidence of any appreciable decline in the shrimp fishery as a whole, it must be pointed out that an increasing proportion of our catch is the Brazilian red shrimp, Penaeus aztecus. In the Port Isabel area, for instance, this proportion ran as high, in some instances, as 80% in 1946-47. Hence, we have no accurate conception of the actual state of the fishery. The probability is, however, that the catch of white shrimp, Penaeus setiferus, is remaining static at about 16 or 17 million pounds, and that it will continue to do so, despite the fact that the boats now operating show a consistently smaller catch per unit of effort than they did prior to the war. It is probable that the fishery has approached its maximum, as far as white shrimp are concerned, and while the general picture is apparently that of a healthy industry with no apparent signs of depletion, I am not entirely satisfied that this is the case, nor do I anticipate any increase in the production of this species.

Red shrimp are another matter entirely. Production of this species has been limited by several factors. In the first place, until recently, we had few boats capable of fishing far enough offshore to obtain any appreciable catch of this species. Nevertheless, the present trend along the Texas coast towards larger, better-powered boats has given the Brazilian shrimp a more prominent place in our catch. It is not generally sought, however, as the deep seated conviction of the American housewife that a red shrimp is a spoiled shrimp, makes it difficult to market, despite its better keeping qualities and excellent flavor.

This is unfortunate, as the dealers are loath to handle the "brownies" on this account. An educational program tending toward the development of a market for this species should offer considerable ground for expansion of our shrimp fishery, particularly as red shrimp are often present in fair numbers when no white shrimp are available.

In passing, I might add that there is the possibility that the development of such a fishery would probably entail some change in fishing methods, as experienced fishermen tell me that red shrimp are apt to be found close to the surface during the daytime. If this is correct, then our present trawl would have to be materially altered, to fish high off the bottom, in order to attain maximum efficiency for this species.

While the shrimp fishery is apparently more or less static, the same cannot be said for our fin fishery.

Because our three main fishes, red fish (Sciaenops ocellata), trout (Cynoscion nebulosus), and drum (Pogonias cromis) are the target of both sport and commercial fishermen

and because all 3 species are dependent upon our bays as spawning and feeding grounds, they are in a peculiarly vulnerable position. As a result they have been subjected to a variety of influences, none of them beneficial, and are showing a slow but steady decline.

The situation is somewhat difficult to evaluate, as lack of accurate data on the past development of Texas fisheries makes it difficult to demonstrate whether depletion is going on. Nevertheless, from occasional data accumulated by the Bureau of Fisheries, and from the records kept by the Game, Fish and Oyster Commission for the past ten years, some deductions may be drawn.

Records for 8 random years between 1890 and 1946 show that (exclusive of the abnormal war of 1918) the total Texas catch of fin fish, omitting red snapper, varied from 4,693,200 lbs. in 1890 to 3,617,453 in 1945-46. For the same years trout ran a little over 1,000,000 pounds; redfish produced 1,107,950 lbs. in 1890; 677,807 lbs. in 1945-46; drum, nothing in 1890, 1,216,069 in 1945-46; sheepshead 778,800 in 1890, 28,323 in 1946.

Judging by these totals, we might be justified in stating that there is apparently little diminution in our supply of fish, with the exception of sheepshead which has almost disappeared. However, I contend that they are misleading.

Examination of 10 years records between 1937 and 1947 show that in two areas that were formerly most prolific, namely Galveston and Matagorda Bays, there has been a steady downward trend in the catches of trout, drum and redfish, although occasional upward fluctuations do occur. To give the worst example, the Galveston area, which produced in 1890, 1,112,000 pounds of trout, redfish and sheepshead, produced in 1946-47 only 5520 pounds of these fish. No drum were produced there in 1890, as they were not utilized at that time. In 1946-47, the area produced 9,579 lbs. Matagorda Bay, at the end of 1946, was also almost entirely out of the picture as a fish producer.

Nevertheless, the Texas totals for the two years varied only about 300,000 pounds, if we do not consider the sheepshead. The explanation of course, is that the 1946 total was the result of new fishing grounds and new species being utilized. In 1890, the Galveston area produced about 38% of our total bay catch, the Laguna Madre only 2%. Today, Galveston produces less than 2%, while the Laguna Madre produces 64% or better, thus not only compensating for the loss in Galveston Bay, but also for that in the more desirable fish, which has also been offset by an increase in the production of drum.

While it is hard to make much sense out of the picture, nevertheless, it apparently shapes up somewhat as follows. When in 1890, we had a production of 4,693,200 lbs. the vast potential production of the Laguna Madre was untouched, only the most desirable species being taken, in those areas contiguous to market. As these areas were exhausted, by fishing pressure and by destruction of habitat, the fishery moved southward, bringing new areas into production to compensate, and, with the shortage of more desirable species, drum began to be utilized, filling in the gap left by sheepshead and bluefish, neither of which now form any appreciable amount of the present commercial or sporting catches, as well as making up for the decline in redfish.

This leaves us, face to face, with the fact that if it were not for the tremendous carrying capacity of the Laguna Madre, our fishery for fin fish in Texas would hardly exceed 1,000,000 lbs. per year, exclusive of snapper.

Many things have contributed to this. Erosion, with its attendant dumping of silt, and pollution, both domestic and industrial, have vitally changed the habitat, particularly in the Galveston and Corpus Christi areas. Destruction of oyster reefs, by dredges utilizing the shell for making cement, has also played its part, not only by removing feeding grounds for the fish, but also by discharging silt into the bays from washing operations, covering formerly productive bottoms and increasing the turbidity of the water. Indiscriminate dredging of ship channels has been another vital factor, altering the contour of the bays, and changing hydrographic conditions. Add to this steady, relentless and increasing fishing

pressure by sportsmen, and the normal commercial fishing, and you have a set of conditions in which the abundance of fish varies in direct ratio to the distance of fishing grounds from civilization.

The situation is complex, and not easy to solve, but it must be solved, and the basic reasons for the decline corrected, before we can expect any considerable increase in these fisheries.

The greatest potentiality for future improvement lies in our oyster fishery, although its present condition is deplorable, brought on by every ill an oyster can fall heir to. Silting, pollution, shell dredges, the U. S. Engineers, poor laws mismanagement and overfishing have all contributed to depletion, and the history of our industry is the history of every oyster industry in every state which has depended upon public reefs.

Nevertheless, we have tremendous possibilities for development if we can convince the fishermen of the coast that it can be done. Texas bays have a surface area of 1,112,450 acres. Of this, approximately 235 or 240,000 acres are probably suitable for oyster culture plantings which we have made are doing comparatively well, good growth has been made, and we hope through the medium of these experimental plots and an active educational campaign to get cultivation started in our state. However, it is a slow process, and it will probably be a long time before we take our rightful place in the oyster picture.

Next to the oyster fishery, our greatest opportunity for expansion lies in the utilization of fish not now considered as commercial possibilities.

Lindner, in his 1941 survey of the Texas coast, says:- "It is probable that the edible fish catch of Texas could at least be doubled if greater utilization were made of such species as the mullet, menhaden, Spanish and king mackerel, and the sea catfish. The crab fishery could also be made to produce many more pounds".

"There is no denying the fact that the productivity of the already established Texas fishery for trout, drum and redfish is limited. It is doubtful that this fishery can be made to yield more than double (if that much) its normal level. Any greatly increased productivity will have to come from fishery resources that are not now tapped. Of these the mullet appears most promising."

"Although having a ready sale in the southeastern States there is no market for mullet in Texas, only 7,000 pounds being reported for the State last year. (The entire South could produce considerably more mullet if the demand were greater. Florida, the chief mullet producing state, has reported trouble in marketing her catch). Gunter (1942) estimates that at least 4,000,000 pounds of mullet could be gotten each year from Texas waters. At the same time, if there was a market, vast quantities could be imported from Mexico. We have been informed that it is a satisfactory product, either salted, or preferably, dried."

Some years ago, off Port Isabel, Texas, a number of tuna were caught which proved to be Lesson's blackfinned tuna (Parathunnus atlanticus). I quote from a letter which I received from Stuart Adkins, of Port Isabel, in response to a query from me:- "Tuna are fish that we have had plenty of trouble with. Every time we hook one of any size the sharks take it off. Those taken here have run from 18 to 100 pounds.

"Not many of them have been caught for as a rule they run far offshore, well over the 100 fathom line. I have seen the Gulf covered with them. Some, I believe, would go over 200 pounds but there always are plenty of big sharks among them also. These fish are always headed southeast, or near that, and travelling plenty fast. We are not very familiar with their travels. One year I spent 4 days on the 100 fathom line hunting for them, only to learn on reaching port that 2 small fish had been taken in 24 fathoms.

"On one trip we were a little over 100 miles offshore and we ran into tuna which I judged would go over 100 pounds".

Early this spring, one of the shrimpers who docks near the laboratory, came to me and described a school of fish which he had seen far offshore, covering many acres. I believe that this was a school of tuna. In July of this year, at Port Isabel, 4 more tuna were taken, and a few days later, one of our biologists, flying over the Gulf, slightly north of Tampico and about 200 miles offshore, saw a mile long school of mighty, fusiform fishes which he estimated at eight or ten feet in length. Again the word tuna suggested itself.

Lindner and others, in listing the fishes of the Caribbean, state that there are at least 4 species of tuna in that area, Euthynnus alleteratus, Thunnus thynnus, Neothunnus albacora, and N. allisoni, as well as albacore, Gerno alalunga, and 3 species of bonito.

I quote from these gentlemen:- "Open-surface offshore areas are the least known of the Caribbean habitats", and, interpolating, of the Gulf of Mexico. "The offshore-oceanic region is perhaps the least productive of food-organisms, for the supply of nutrient salts is low. Yet all available evidence points to considerable supplies of fish in the "blue" waters. The fish in this habitat may be divided into two groups - the long-range migratory such as tunas, sword fish, marlins and sailfish, and the limited migratory such as Spanish mackerel, kingfish, flying fish, and dolphins. The first group has been available to shore fishermen only at certain times of the year, but may be taken, possibly, in quantity offshore at other times. Hardly anything is known of the distribution, abundance, migration routes, or seasonal occurrence of the pelagic fishes. (The italics are mine, JLB)..... Since the abundance of these migratory fishes is not directly effected by the low productivity of the Caribbean Sea, there is some reason to believe that considerable amounts might be taken with proper methods. Limited migratory species....are not now being utilized to the extent possible, and this is due chiefly to the limited radius of the present fishing methods.

"From all evidence available and after consideration of the other habitat types, it is suggested that the fisheries for the pelagic species...both inshore and offshore....offer the greatest possibilities for fishing expansion in the Caribbean area".

The conclusion stated above probably holds true for the Gulf of Mexico also. Most of the species mentioned as occurring in the Caribbean also occur in the western Gulf. A noteworthy fact is that while Lindner's commission lists these species as occurring in the eastern Caribbean, they do not know where they come from, or where they go, and if they have any knowledge of the western Caribbean, they do not mention it. They do say, however, "There are many gaps in the areas studied, and new species, doubtless, will be found with more intensive field work and collecting methods."

The above statement might just as well read "old species will be found in new areas with more intensive field work and collecting methods".

An interesting possibility that might be developed by a fisheries survey is connected with the Pacific tuna fishery. Whether or not we can develop a Gulf and Caribbean tuna fishery remains to be seen, but, the fact is, there are tuna within fishing distance of Gulf ports that we now know about, for the tuna fishing grounds of the Pacific are many hundreds of miles closer to Houston and New Orleans than they are to the Californian ports from which the tuna clippers now operate. Development in the Gulf and Caribbean of the presence of an assured live bait supply for this fishery, by such a survey, would be of inestimable benefit to American fishermen in many ways. Live bait, on the west coast, is as a rule, obtainable only in Mexican waters, and for years the Mexican government has levied exorbitant taxes on such bait. A supply in Gulf and Caribbean waters would make it possible for boats operating from the Gulf to travel to the Pacific grounds without payment of these prohibitive taxes, thus possibly giving badly needed room for expansion to our Gulf fishermen. Moreover, no such fishery could operate in either the Gulf or Caribbean unless they were certain of sufficient bait.

Putting aside, however, the possibilities of the development of such fisheries as outlined above, by the means of intensive research in the Gulf, we do have fisheries already established for limited migratory and reef fishes that are badly in need of research and

encouragement by every means in our power, and that might be expanded by such research until they would furnish many additional millions of pounds of food to a hungry world.

The kingfish (Scomberomorus cavalla) and Spanish mackerel (S. maculatus) of the western Gulf have never been utilized, and yet great schools of them occur. At this time (although Florida fishermen catch several million pounds a year) less than 50,000 pounds are produced in the States of Louisiana and Texas, and no one has the slightest idea as to the potential capacities of such a fishery. Similarly, blue fish once supported a small commercial fishery on the Texas coast, but now seem to have disappeared. Why? No one knows, and only an intensive survey can find out. Menhaden, another of our Gulf fishes, are worthy of investigation. Great schools of them are often seen. Are these schools large enough and consistent enough to support the establishment of a fishery? And if they are, who is going to convince the sportsmen that such a fishery does not damage their littoral fishing? Or does it? There has never been any research done on this, and so we don't know. Such lack of knowledge, however, is often the father of the foolish and idiotic conservation laws passed by state legislatures, that often do more harm than good.

There are two other possibilities that I shall mention in closing. The first case is that of the red snapper (Lutianus blackfordi). No one knows anything about it. Are they migratory or non-migratory? Have we more snapper banks along the Continental shelf than our fishermen have stumbled over? Can this fishery for this fine food fish be expanded? The second concerns the vast and sandy plain beneath the sea that extends, sometimes as much as 100 miles offshore, from our coasts to the Continental shelf. In the Carolinas, where the fish fauna is much the same as it is in the western Gulf, an extensive winter trawl fishery is prosecuted for flat fish. Does the Gulf present the same possibilities? Are we overlooking a bet that would mean many additional pounds of food with an attendant increase in fishermen's incomes?