International Aspects Of The Shrimp Fishery In The Gulf Of Mexico

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Abstract

THE DEPARTMENT of State is concerned only with conservation in international waters and the rights of our fishermen. There are no conservation problems in the Gulf and the fishermen's rights question is quiet at present. The Department of State abides by the international three mile limit.

Potentialities For Increased Utilization Of Scrap Fish And Fish Waste In The Gulf And Caribbean Area

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IN THE GULF and Caribbean areas large quantities of scrap fish and fish waste are discarded annually. Shrimp fishing is responsible for a large portion of this wasted by-product and the quantity of shrimp taken in this area is increasing annually. In Texas it is reported that the production of shrimp has more than doubled during the last two years and is steadily increasing. Off the southern coast of Florida a tremendous new shrimping area was uncovered this past year and further investigation indicates that large beds exist all along the Gulf Coast that will be fished in increasing volume within the next few years.

About 40 per cent of the total weight of shrimp is in the "head." Heads are usually removed at sea and dumped overboard. When shrimp are peeled for canning there is an additional 10 per cent waste. Therefore, at the canning plant 50 per cent of the weight of the shrimp that are caught is discarded Coupled with this is a large amount of trash fish that is unavoidably caught in the shrimp trawls. As much as 90 per cent of the haul is frequently trash fish that must be separated out and thrown overboard. In the newly-discovered Florida beds some fishermen have reported that at no time are they able to bring up enough edible fish even to supply the crew. The trash fish seem to be almost entirely of the inedible type, and therefore should be ideal for processing into feed.

An estimate made by the Texas Game, Fish and Oyster Commission Laboratory at Rockport, Texas on the basis of a short series of drags, revealed that only 7 per cent of the total weight taken was actually marketed. One night of dragging by the research ship *Oregon*, with relatively good fishing, produced 2870 pounds of heads-on shrimp and marketable fish and 4227 pounds of unmarketable fish and invertebrates. The amount of scrap tends to be highest from the small in-shore boats, and since this area generally produces the smaller shrimp the amount of work in separation of the catch is greater. Most of the surveys on scrap ratio seem to have been based on in-shore operations. However, as stated above, it is reported that in the newly discovered deep-water beds off the coast of Florida, a tremendous quantity of trash fish is being brought in at each haul, and that the catch of trash fish over these beds will run frequently close to 90 per cent.

The U. S. Fish and Wildlife Service reports the following catches of shrimp along the U. S. Gulf Coast for the year 1949. This report is given in barrels of 210 pounds of shrimp with heads on which normally would be the equivalent of 125 pounds of shrimp with heads off.

Florida (being mostly the Apalachicola area)	5,738 barrels
Alabama	9,179 barrels
Mississippi	20,334 barrels
Louisiana (New Orleans area)	20,573 barrels
Louisiana (Golden Meadow area)	9,554 barrels
Louisiana (Houma area)	29,631 barrels
Louisiana (Morgan City area)	22,097 barrels
Texas (Galveston area)	25,562 barrels
Texas (Port Lavaca area)	14,000 barrels
Texas (Aransas Pass & Rockport)	20,000 barrels
Texas (Portersville & Brownsville area)	52,000 barrels

This is a total for Louisiana of 91,855 barrels, for Texas 112,240 barrels and a grand total for the U. S. Gulf Coast of 239,346 barrels. Computed at 210 pounds per barrel this amounts to 50,262,000 pounds of shrimp.

As stated before, of this amount fully 40 per cent can be calculated to be waste, or approximately 20,000,000 pounds. If the trash fish caught with the shrimp were saved, the amount of trash fish from this catch alone would amount to something like 502,000,000 pounds. Let us say that it would be practical to save only half of this amount. There would then be something like 250,000,000 pounds of trash fish that could be landed along with these shrimp. Adding to this the 20,000,000 pounds of heads normally wasted, there are 270,000,000 pounds of material available for processing.

Another product that has received only casual consideration is crab waste. Blue crabs are usually caught for processing rather than for the fresh market. These crabs are brought into a central processing plant, cooked, and the crab meat picked out by hand. Only about 15 pounds of crab meat is recovered from each 100 pounds of crabs caught. The remaining 85 per cent is dumped as waste.

The U. S. Fish and Wildlife Service reports the following catches of hard shell crabs along the Gulf area for the year 1949:

Florida	1,000,000 lbs.
Alabama	687,000 lbs.
Mississippi	783,000 lbs.
New Orleans area	4,000,000 lbs.
Morgan City area	2,915,000 lbs.

In Texas there appears to be very little crab fishing. Their report shows only 440 pounds for the year. The total, however, for the entire Gulf area was 9,434,280 pounds. This would result in 8,000,000 pounds of waste.

There is a considerable quantity of fish offal at various places along the Gulf, resulting from the processing of fresh food fish. This fish scrap and the crab waste, however, are usually at scattered points and in such small quantities at each point that it would not be practical to try to dry the waste at each individual fishing plant. However, a cooperative central drying plant could be built, convenient to each area, and the operation could then be made profitable.

The wastes from trash fish, fish offal, shrimp and crab operations are all easily processed, but are also easily damaged during processing, if the equip-

ment used is not properly adapted to the job. These by-products when properly handled make excellent feed for poultry and hogs and are a source of vitamin B. Hogs fed on crab waste that has been properly dried do not develop a fishy flavor in the meat that occurs if the crab waste is fed in the wet state. Dogs also relish these dried meals, and an excellent dog food can be made with any or all of these materials as a major base. Most of the product, however, has been sold for poultry feeding since there is a ready demand from this source.

It usually requires about 3 to 3½ pounds of crab waste to produce one pound of crab meal, about 4 to 1 for trash fish and 5 to 1 for shrimp heads. On this basis there is a possible 67,500,000 pounds of high grade fish meal and shrimp bran and 2,670,000 pounds of crab meal available along the Gulf Coast. These figures are based on the dried finished product ready for the feed trade.

To convert this waste into a salable product, it is first necessary to get the waste to the drying plant with as little cost as possible, as this can become an item of substantial cost unless properly managed. Since the shrimp boats are carrying edible cargo for human consumption it would be impractical to hold shrimp heads and trash fish on the boat for any length of time without icing. One practical means to overcome this problem would be to have a run boat to pick up the heads and trash fish from the shrimp fleet at regular intervals during the day. Trash fish and shrimp heads could be carried in special containers so that they could be transferred from the shrimp trawl boat to the pick-up boat by boom to facilitate handling in rough water. Another method would be to equip the boats with mechanical refrigeration, reserving one hold for the trash fish and shrimp heads and another hold for the headed shrimp. Actually, however, it would not be too costly to provide special boxes containing ice into which the trash fish and shrimp could be thrown in order to keep them until the shrimp boat arrives at its home port. This would be no more costly than would be the case if the shrimp were not headed at sea and were brought in to a canning plant.

Having succeeded in collecting the scrap at the plant, however, it is very easy to spoil everything and get little or no return from the drying operation. For instance, in the processing of shrimp heads the dehydrator must be constructed to provide a rapid flow of comparatively warm air to carry off moisture, without raising the temperature of the waste sufficient to damage the material. Shrimp heads are composed of a very thin oily shell that is easily dried before the wet solids of the head become dry, and can actually burn in a dryer that requires high temperatures. Feeding tests indicate that the vitamin B content of fish products is adversely affected at temperatures in the material above 180°F. The vitamin B content of the trash fish can therefore be easily destroyed by over-heating.

Further, trash fish, shrimp heads and crab waste should be cooked prior to dehydrating, and then ground before they are introduced into the dryer. In this cooked and ground condition the mass is somewhat sticky and very wet and tends to adhere to the metal surfaces in the dryer. Here it can build up into large lumps, harden and resist any practical attempts at uniform drying. It would not be practical to press this waste because a good part of the feeding value, particularly vitamin B, is in the dissolved solids. Therefore, it is more advantageous to dry all the moisture out of the waste, leaving all of the original solids in the finished feed. There has been developed a unique recycle

system connected with a triple pass dryer that solves this problem. This involves drawing from the dryer some of the partially dried material to blot up the surface free liquid, so that the resulting re-mixed mass is of a damp rather than wet nature. It is something like press cake that has gone through a standard fish press. In this condition the mass does not stick to the surfaces of the dryer and can be easily reduced to a uniform dried meal.

In processing this waste, the biggest individual item of cost is that of fuel oil for evaporating moisture. Further, the item of labor can be excessive if the plant is not properly designed, so that a continuous flow of the product from raw material to the sack is accomplished by means of proper control instruments. With such a plant labor costs become inconsequential. An example of the production costs for such an operation is as follows—

Fuel oil—50 gallons per finished ton of meal at 8 cents per gallon	$ 4.00
Labor—2 operators	4.00
Power—at 2 cents per Kilowatt hour	1.50
Steam	.60
Bags	2.50
Amortization of equipment, insurance and incidentals such as repairs, etc.	5.00
Total cost for producing meal	$17.60 per ton

The present market value of fish meal is about $125.00 per ton, for shrimp bran $100.00 per ton, for crab meal $60.00 per ton. We can therefore figure a fair net profit of $90.00 per ton for fish meal and shrimp bran, and $40.00 per ton for crab meal. Since the potential annual production of these meals is something like 35,000 tons, more than $3,000,000 of real profits are actually going to waste in the Gulf area each year. If arrangements were made to handle and market this waste, the fishermen would become interested in saving the trash and inedible fish, and would actually fish for them. In that case this tonnage and possible profit could easily be doubled.

Report On The Fisheries Of Surinam

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THE DUTCH ACQUIRED SURINAM, or Dutch Guiana, as it is better known in this country, in an exchange deal with the British in the middle of the Seventeenth Century, whereby the Dutch ceded Manhattan to the British. Surinam is a tropical country of about 50,000 square miles, or, about the area of Wisconsin, with a population of approximately 210,000. Of this population, 70,000 live in the capital, Paramaribo. It has one of the most mixed populations in the world, consisting of Creoles of African-Dutch and Spanish extraction, of Indians, Javanese, Chinese, Bush negroes, and approximately 2000 whites. It is bounded on the South by Brazil, on the North by the Atlantic Ocean, on the East by French Guiana, and on the West by British Guiana.

During the years 1750-1755 Surinam was a wealthy country. There were about 500 plantations, producing sugar, coffee, cotton, and cocoa. At that time the general value of exports approached 265 million guilders annually. By