Two Case Histories of Successful Fisheries Development in Trinidad and Tobago

HUBERT E. WOOD
Division of Fisheries
Ministry of Agriculture
Port of Spain
Trinidad and Tobago

INTRODUCTION

Between 1672 and 1708, 156,000 slaves were brought to the West Indies to replace the white laborers on the plantations where agriculture was confined to sugar production. The result was a shortage of protein foods in the West Indies. The colonizers of the coastal areas of the New World, which subsequently became Canada, were already shipping dried cod to the European navies and the large Catholic populations of France and Portugal. They used this new incentive to further develop their fisheries, and thus they accidentally imprinted this taste for dried cod on the West Indian menu to this day.

By 1841 the combined British West Indies and other West Indies colonies absorbed over 70% of the fish exported from Nova Scotia. It is recorded that the trade between Canada and the West Indies at that time involved over 400 merchant ships and 10,000 seamen.

With changes in the world economic climate, it was found expedient that the "colonies" should become more self-sufficient so as to pay for their own food while producing raw material for the mills of the "mother country" for transformation into "added value" products. The pressure was now on the colonies to feed themselves and various advisors produced an array of documents proposing solutions to this problem. Nevertheless, imported dried cod continued to be a major source of protein in the diet of the colonies.

During the early 1960s Jamaica, Trinidad and Tobago, and Barbados became independent nations, within the British Commonwealth. This, with the changing status of other islands in the Caribbean, placed on them the burden of feeding themselves and developing their own resources so that they could survive as complete economic entities in a highly competitive world.

The following two case histories show how in one particular country the fishery resources have been utilized to achieve the above goal.

CASE HISTORY I – DEVELOPMENT OF TRAWL FISHERIES

In 1910, Harry Vincent, an ardent sport fisherman, wrote a book "The Sea Fish of Trinidad." In it he demonstrated the feasibility of using a steamtrawler and commented, "it will be seen by these notes that a steam trawler of good capacity can be brought out here, ready for action and fully equipped for about

twelve thousand dollars, and I see no reason why the venture should not be a profitable one and at the same time supply the Colony with good fresh fish at six cents per pound."

Thirty-five years later Whiteleather and Brown (1945) in their report to the Anglo-American Caribbean Commission found, after an experimental survey in the area using a 77 foot (overall) vessel, that four species of shrimp were present, and that catch rates of fish from 202 to 574 lb per hour were possible.

On fishing gear they concluded, "It is believed that the otter trawl has a future in the Gulf of Paria. . . .More consistent catches of fish were made with the small otter trawl even under experimental conditions than by any other type of fishing gear in local use at the corresponding time." On marketing, they concluded, "since the market demand for all kinds of fish greatly exceeds the supply, a fair price would be commanded by trawl caught fish."

A further report for the Government of Trinidad and Tobago and the Caribbean Commission was made in 1955 by A.R. Richards. He was very much influenced by the Whiteleather and Brown (1945) report and commented, "one or two minor private attempts were made subsequently to apply their recommendations but in general local fishermen continued to use the seine nets and handlines." It should be pointed out at this time that the survey in question was financed by Thor Dahl, Inc., a company that was described by Richards as, "having amongst other enterprises, extensive fishing, freighting and whaling interest in many parts of the world." After six months' work Richards concluded, "it was apparent that trawl fishing could not be carried out on the very large scale hoped for originally for Thor Dahl, Inc., and the future lay in fishing on a smaller scale if prices improved."

It may be prudent at this point to introduce the question of prices. At this time (1955), trawl type fish was described as "d" class fish and the average wholesale price was 14-16c T.T. per pound. In fact Richards in his analyses used 13c T.T. per pound as his working figure.

A case for establishment of a small fleet was made by Richards (1955), predicated upon the fact that "saltfish is consumed in preference to fresh fish because it is available in unlimited quantities all year around and because of its keeping qualities."

It appears therefore that the attitudes toward fisheries development over the years went through a variety of stages and are listed progressively as follows: (1) to feed the "Colony" in the first stage; (2) to reduce the importation of salt fish, which could be achieved by increasing the production of fresh fish locally; and (3) import substitution for stabilization of the economy. Having realized that none of these concepts were working, we decided to adopt a new strategy.

In view of the fact that shrimp was already being landed on the local market, and increased landings invariably meant a reduction of prices on the local market, a secondary terminal market was established so that all surplus could be channeled off the local scene.

In 1968 there were nine foreign companies operating 88 Gulf of Mexico-type trawlers out of Trinidad, and fishing off northeast South America (the Guyanas and Brazil). We rationalized that if these companies could get shrimp for the

U.S. market without having to worry about production and attendant problems, then they should be pleased.

Arrangements were made to have a merchant purchase the shrimp in Cedros, employ girls to take the heads off, place the shrimp in large tins of ice water and transport them for sale to the owners of the already established foreign fleet. This effort was an immediate success. By June 1968, I (Wood, 1968) had documented that: (a) 80% of the country's inshore trawling fleet had migrated to the south of Trinidad; (b) shrimp production had increased by 133% over total landings for the country within a week and over 250% of the total for the same period the year before; (c) 50% of the catch was being processed for export; and (d) 60 new jobs (removing shrimp heads) had been created. I concluded, "It does seem that refinement of this system and application to specific fisheries does seem to be the answer to increase production to the inshore fishermen in the Caribbean."

One year later Jordan (1969) showed that: (1) 75 new trawlers were constructed between 1968 and 1969; (2) more shrimp was being made available and utilized locally; and (3) by June 1969, approximately 500 persons were directly employed in all aspects of the shrimping industry (artisanal).

In early 1969 only two Trinidad and Tobago registered Gulf of Mexico-type trawlers fished locally (Fig. 1), but by the end of 1969 we had nine.

During 1969 and 1970, we attempted to stimulate the development of fin fish through export promotion. By late 1969, our first shipment of snapper and Spanish mackerel went to Jamaica. In early 1970 we entered the U.S. market via Miami; a little later we had fish in New York, and by September of the same year, we had our first shipment in Montreal (Wood, 1972 b).

In the meantime, fish was being removed from the local market, hence a false demand picture occurred and wholesale prices went up. This provided further stimulus for the purchase of 75-foot trawlers. During 1970, three documents were produced and circulated (Wood, 1970 a and b; Wood, 1972 a) in an attempt to have the Government and local entrepreneurs purchase a decent fleet. By 1972 we had 30 registered trawlers while exports continued to rise and so did local prices (Fig. 2).

By 1972, tests began on processing of underutilized species into fish balls, fish sticks, canned and dried products (Wood, 1972). Unfortunately, we have not as yet been successful in getting these products into the local market. The Government purchased a shrimp fleet in 1972 and later, in 1973, purchased a shrimp processing plant.

The total registered deep-sea fleet in Trinidad and Tobago now (1977) consists of 70 vessels (Fig. 1).

Evaluation

According to Richards (1955) grade "d" fish (croaker and salmon) was 16 cents per pound. By 1969 croaker and salmon fetched an average of 36 cents per pound on the wholesale market. Thus, the price of these grade "d" fish increased over a 14-year period by 125%. However, on the subsequent introduction of export marketing over a 5-year period they rose by 200 to 300%.

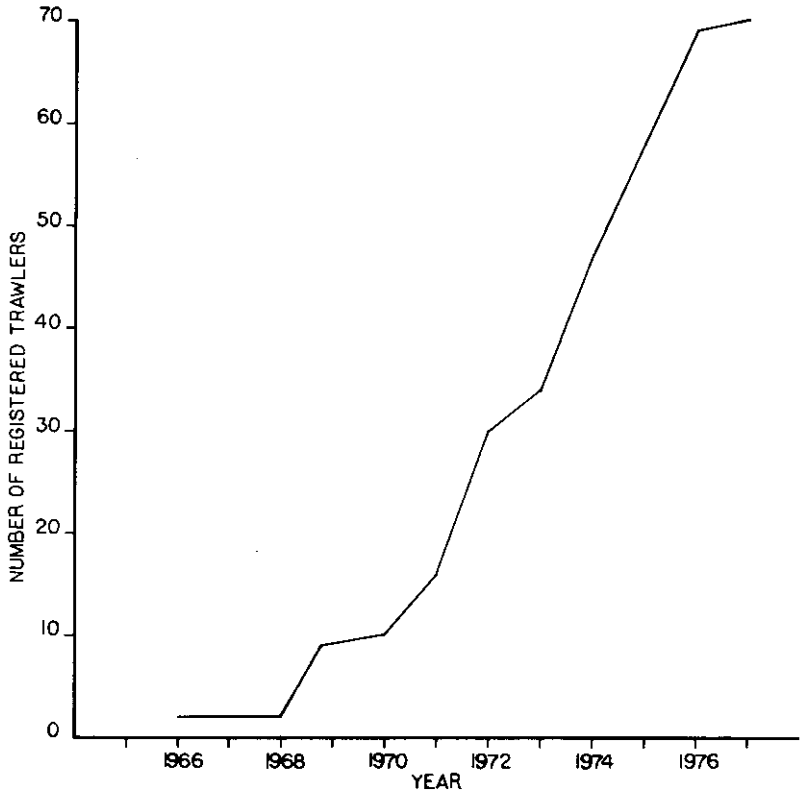

Fig. 1. Number of registered trawlers in Trinidad in the years between 1966-1977.

Examination of the data provided on the prices of flesh protein 1972 to 1977 reveals that there had been substantial increases in the price of fish. Although the magnitude of the price differential differs considerably among species and between other flesh protein suppliers, pork and chicken in particular, the reasons that could be attributed for this situation are: (a) the existing cost/price ratios; (b) increasing incomes and therefore increased ability to purchase; (c) increasing population and therefore increased demand; (d) spiralling inflationary trends; (e) non-seasonal nature of substitute items – pork and chicken; (f) periodic discrepancies in both factor and product markets; and (g) absence of effective price regulating mechanisms.

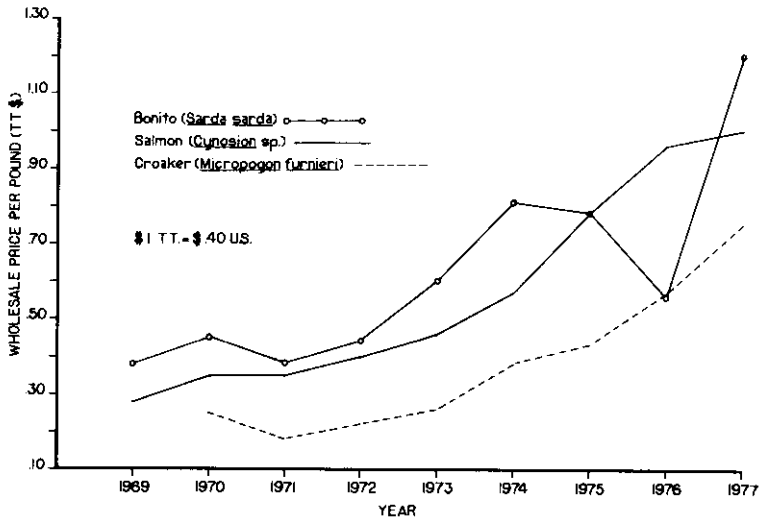

Fig. 2. Price per pound (wholesale) of fish in the years between 1969-1977 in Trinidad and Tobago.

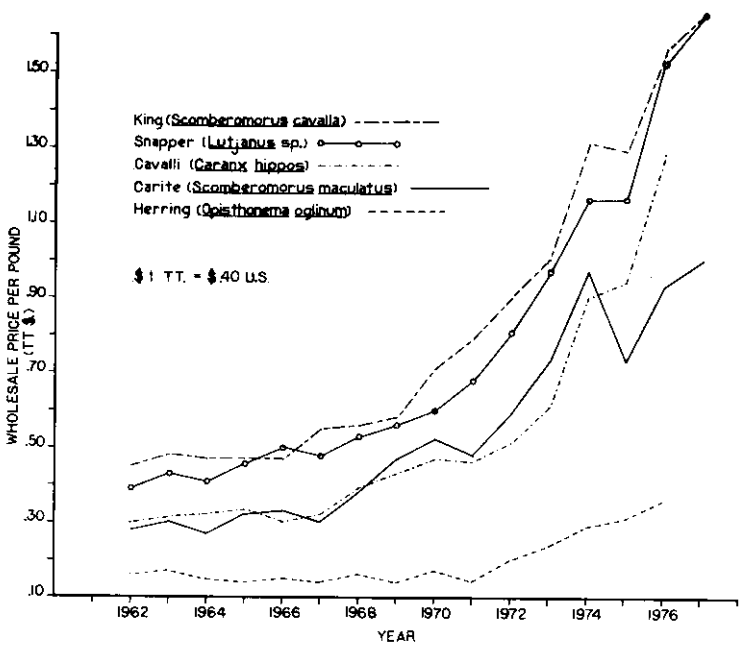

Fig. 3. Price (wholesale) per pound of fish in Trinidad from 1962 to 1976.

Fisheries development over the years has witnessed irreversible successes in terms of: (1) Increased supplies to domestic and foreign markets – in the former, a greater stride toward self-sufficiency in food, and in the latter, the provision of valuable foreign exchange for sustained development. Figures are not available to examine the effects of import replacement. (2) Increasing employment opportunities because of the multi-dimensional nature of the industry – from boat-building to packaging. The concomittant income-generating effects had a substantial positive impact on overall development of the industry.

It would seem that although heavy investments were made in fisheries development over the years, funds were injected into areas that cannot now be said to be economically feasible entities. Further development paths for national fisheries development would therefore call for more rigidity in planning and implementation stages, and constant review and modifications with time. The interplay of economic, social, and other relevant factors must be taken into account.

CASE HISTORY II – DEVELOPMENT OF THE FLYING FISH FISHERY

In 1962 a private investor bought a classic Barbados fishing vessel and by 1967 he went into the processing of flying fish, a fish previously unused in the fishery. In 1977 he processed 600,000 flying fish of which just under 500,000 were exported. For a fishery that was previously non-existent in Trinidad and Tobago to where it stands today, the development of the fishery must be considered a definite success story.

History

The present processor, prior to entering the field of fisheries, was a professional manager of a coconut estate from which he earned his livelihood in Tobago. In 1962, he teamed up with another resident of the island and went into the fishing business. In 1962, these entrepreneurs purchased a vessel from Barbados on which they employed two Barbadian fishermen. The fishermen apart from trolling, introduced a technique known as "lurking", which is technically a six-hook long-line, fished with live flying fish for pelagic species such as dolphins, tunas, sailfish, and others. There was then no market for flying fish in Tobago.

After 2 years of operation the partners separated and the present operator retained ownership. Somewhere during this period the Barbadian fishermen married girls from Tobago to whom they imparted the knowledge of the process of deboning of flying fish. Meanwhile, the owner of the boat religiously retailed his fish through the streets in a Land Rover vehicle.

It is no longer clear how the marriage of the "Bajan" fishermen, their wives learning the deboning technique, the owner of the vessel getting tired of selling his fish through the streets, and the Government trying to bring in Barbadian women to teach the technique of deboning in Tobago, aggregated to create a trigger mechanism which launched the present industry.

Method of Fishing

The flying fish vessels average 22-26 ft. overall length and are manned by two men. The boats are of the typicalTobago "bum-boat" construction; four of these use diesel engines and the rest are powered by outboards, making a total of 16 boats involved in this fishery.

The nets are similar to those used in Barbados in that they are about 30-feet long and 12-feet deep. They are hung on the full as the flying fish will tangle in anything as soon as the spawning behavior takes over.

To find the concentrations of flying fish, the fishermen look for masses of floating debris, e.g. sargassum weed, and oil slicks on the water. The behavioral patterns are not yet clear, but it appears that the flying fish get into a spawning frenzy as they attempt to deposit their egg mass on the net. Meanwhile, the "lurking" lines are out and they catch ancillary pelagic species which are attracted to the concentration of flying fish. Among the attracted pelagic species are sharks and as a result flying fish nets have to be picked up every hour to prevent the sharks attacking the gilled flying fish.

Experiments in Tobago have shown that the red-colored flying fish net catches more flying fish than the conventional green netting, but the green netting continues to be used. Bales of net are brought in from Barbados by the processor and sold to the fishermen at cost.

At present the fishery consists of 16 boats with 32 men of which the average earning for the season is $12,000 T.T. per boat. One particular boat that we have monitored earned over $18,000 T.T. over the season; the result of 124 days of work, an average of $145 T.T. per day.

The money earned by a boat is divided into three parts, one half goes to the owner of the boat and the other half is divided equally between the two fishermen. It is customary for one of the fishermen to be the boat owner, hence he receives three-quarters of the proceeds. Hence, in the above example, he would have grossed $108 T.T. per day. In comparison with other wages in the country – an average of $26 T.T. per day for a skilled craftsman – it appears that at the time flying fish fishing is the most lucrative trade available.

Processing

Fish are landed on the beach, then transported to a cold storage unit in a shed in the backyard of the processor, where they are kept on ice. The following morning the fish are distributed to 10 homes in the village, each of which has a team of 10 women who proceed to fillet the flying fish. These are then collected by the processor about every 2 hours and taken back to his home. There the fish are packed six to a plastic bag (10-12 oz.) and frozen. The women fillet an average of 200 fish per day and each of them earns between $50 to $80 per week.

The advantages of this cottage-type industry are obvious. The processor has no union problems, no factory overhead, and the workers have no transportation costs. Given the size of the villages where this industry operates, it provides employment for almost all of the female labor force.

Evaluation

For centuries flying fish have been present around Tobago but the fishermen caught them only for use as bait in trolling operations. It holds little or no consumer acceptance in Tobago and it does not even appear in the market. Small quantities were being sold in the supermarkets in Trinidad but even so, only persons of Barbadian heritage, who knew the fish, were prepared to purchase it.

The real boost for expansion came in the development of a secondary market.

A recent market survey done by the Fisheries Division showed a potential market for over 4 million lb of flying fish per annum as it is the only fish in the region that is tailor-made for the institutional markets at home and abroad.

CONCLUSIONS

These examples of case histories show that it is possible to develop a fishery from a zero position, and additionally, it is possible to add linkages to a fishery either to further develop its productivity or to initiate new fisheries on a modular basis to already developed lines.

At this time, it is virtually impossible to measure the various parameters of the steps in development and the gross economic gain. However, it is clear that there has been a net economic gain to the community and a virtual irreversible trend in the advancement of the utilization of the fisheries resource.

Probably the overriding aspect of this development is the lack of involvement of state funds in these achievements, and the minor degree of practical application contributed by various studies of the specific resources.

Some of the benefits that have normally been ascribed to international agencies, but have been achieved without help, are as follows: (1) Trinidad and Tobago now has three processing plants, one owned by the government and two privately. Of these, two are relatively large, one with a capacity of 2,000 tons of cold storage and one with a fish meal plant. (2) Trinidad has changed from an importing country to an exporting country with respect to wet fish. (3) Trinidad fishing boats landed 2,000 tons of shrimp heads-on, in 1976 for the export market. This fishery has been extended from an artisanal fishery to an offshore fishery over 1,000 miles from their base. (4) A change in consumer acceptance of fish species has been affected. (5) A development of ancillary industries and transfer of technology has been achieved. (6) The filleting of fish has been perfected without external help. (7) The village of Cedros has shown remarkable development in housing and recreation. (8) From one Gulf of Mexico-type trawler in 1968 we now own 72 of these vessels. (9) Most of the development has been due to personal refinancing. (10) Our dockyards have been extended. (11) There is now a lively interest in marine biology on the part of the public. (12) As an empirical measure, a few of our trawler owners are millionaires.

The famous nineteenth century French economist, J.B. Hay, claimed that when there was a surplus, demand could be created; we believe that where there is a demand, a surplus could be created.

Dos Casos Históricos sobre el Exito del Desarrollo Pesquero en Trinidad y Tobago

RESUMEN

Durante tiempos coloniales, la dieta en proteínas en las Indias Orientales dependía principalmente en bacalao seco importado. A principios de la década de 1960, Jamaica, Trinidad y Tobago, y Barbados, al alcanzar su independencia dentro del Protectorado Británico, se vieron obligados a alimentarse por sí mismos y a desarrollar sus propios recursos.

Los siguientes casos históricos nos muestran como en un país determinado, los recursos pesqueros pueden ser utilados de tal manera que permita alcanzar dicha meta.

El primer caso se refiere al desarrollo histórico de la pesca de arrastre. Harry Vincent (1910) menciona las ventajas del uso del arrastre a vapor, pero no fue hasta 1945 que Whiteleather y Brown, demostraron que la tasa de captura en arrastres experimentales, usando red de puertas (otter trawl), era entre 202 y 574 lb. de peces por hora, capturándose además cuatro especies de camarones.

Richards (1955), influenciado por el reporte anterior, comentó que a pesar de las recomendaciones de dos empresas privadas, los pescadores locales continuaban pescando con red barredera, y cordel y anzuelo; además añadió que preferían el pescado salado al fresco, ya que se obtenía en cantidades ilimitadas todo el año y por su ventaja de almacenamiento.

Por lo anterior, parece que las aptitudes hacia el desarrollo pesquero han pasado por las etapas siguientes: (1) Alimentar a la "Colonia", (2) Reducir la importación de pescado salado, aumentando la producción local de pescado fresco, y (3) Importar substitutos para estabilizar la economía.

Debido a que los factores anteriores no funcionaron, y al hecho de que ya se estaba desembarcando camarón localmente, se decidió aumentar su desembarco lo que causó una reducción de su precio, desarrollándose así rápidamente la industria camaronera. Wood (1968) y Jordan (1969) mostraron el crecimiento vertiginoso de la pesca e industria camaroneras, creándose así nuevas fuentes de trabajos, inclusive para mujeres en el descole de camarones; por consiguiente la construcción dearrastreros también aumentó considerablemente entre 1968 y 1969. Durante 1969 y 1970 se estimuló el desarrollo de las capturas de peces, habiéndose exportado pargo y serrucho a Jamaica. Desde 1970 a 1972 se extendió nuestro mercado a Miami, Nueva York y Canadá; en 1973 se adquirió una planta procesadora de camarón; actualmente (1977) se cuenta con una flota de aguas profundas de 70 embarcaciones.

El segundo caso histórico relata el éxito alcanzado en la pesquería del pez volador, desde que se inició en 1962 por un inversionista privado hasta la actualidad (1977) en que se procesaron 600,000 ejemplares, de los cuales se exportaron 500,000.

Esta pesca comenzó en Tobago en 1962 con dos pescadores de Barbados que pescaban curricaneando y que introdujeron el método de "lurking" que consiste en un palangre de seis anzuelos, usando pez volador como carnada viva para pescar entre otros peces, delfines, atunes y agujas. Dichos pescadores enseñaron a sus esposas de Tobago el proceso de deshuesar el pez volador. El hecho de que el dueño de la embarcación se cansó de vender el pescado por las calles, y de que el gobierno tratara de traer mujeres de Barbados para enseñar en Tobago el método de deshueso, provocaron el inicio del auge de la industria presente.

El pez volador se usa en Tobago casi exclusivamente como carnada en la pesca de curricaneo, teniendo poco o ningún mercado; en Trinidad solo lo consumen aquellos que provienen de Barbados.

La falta de fondos estatales y la falta de aplicación práctica de los estudios realizados sobre los recursos, han dificultado el desarrollo pesquero en Trinidad y Tobago.

A pesar de no recibir asistencia internacional se han obtenido los siguientes progresos: (1) Trinidad y Tobago tienen tres plantas procesadoras, (2) de país importador de pescado fresco, Trinidad se ha convertido en exportador, (3) en Trinidad se desembarcaron 2,000 tons. en 1976; (4) cambio en la aceptación de especies de pescado por parte del consumidor, (5) desarrollo de industrias subordinadas, (6) perfeccionamiento del fileteado de pescado, (7) la villa de Cedros se ha desarrollado considerablemente en viviendas y recreación, (8) aumento de arrastreros Golfo de México, de una embarcación en 1968, a 72 en 1977, (9) casi todo el desarrollo se ha realizado con refinanciamiento personal, (10) los astilleros han sido ampliados, (11) existencia de un gran interés público en Biología Marina, y (12) muy pocos de los dueños de los arrastreros, son millonarios.

LITERATURE CITED

Jordan, C.
1969. A survey of the shrimp industry of Trinidad and Tobago. Fisheries Division, Ministry of Agriculture, Lands and Fisheries (mimeo).

Richards, A.R.
1955. Trawl fishing in the southeastern Caribbean. Caribbean Commission Central Secretariat, Port of Spain, Trinidad. 147 pp.

Vincent, H.
1910. The sea fish of Trinidad. J.J. Little and Ives Co., New York. 97 pp.

Whiteleather, R.T. and H.H. Brown
1945. An experimental fishery survey in Trinidad, Tobago, and British Guiana with recommended improvements in methods and gear. Anglo-American Caribbean Commission. 130 pp.

Wood, H.E.
1968. Results of an experimental secondary terminal market on production of shrimps. Fisheries Division, Ministry of Agriculture, Lands and Fisheries. (mimeo). 5 pp.

———.
1970a. Present and future status of the fishing industry in Trinidad and Tobago. Fisheries Division, Ministry of Agriculture, Lands and Fisheries. (mimeo). 5 pp.

———.
1970b. Potential for fisheries development. Fisheries Division, Ministry of Agriculture, Lands and Fisheries (mimeo). 10 pp.

———.
1972a. Proposals for a trawler fleet. Fisheries Division, Ministry of Agriculture, Lands and Fisheries. (mimeo). 9 pp.

———.
1972b. Ye Charibby revenge. Fisheries Division, Ministry of Agriculture, Lands and Fisheries. (mimeo). 3 pp.

———.
1972c. The high cost of our prejudice. Fisheries Division, Ministry of Agriculture, Lands and Fisheries. (mimeo). 12 pp.