

Resources of the Wadge and Pedro Banks

By

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Introduction

CEYLON'S interest in trawler fishing dates back to 1902 when a Colombo merchant attempted to operate a trawler off Ceylon waters. The next attempt was made in 1907. These attempts did not proceed any further.

Between 1920 and 1923 a very comprehensive survey of the littoral waters around Ceylon was carried out. One of the principal aims of the survey was to investigate the possibility of trawler fishing in the seas around Ceylon. Malpas (1926) and Pearson and Malpas (1926) reporting the results of the survey indicated that the Wadge and Pedro banks were the only areas available to Ceylon for commercial trawler operations and indicated that the fish resources in the two banks could be profitably exploited.

Commercial exploitation of the Wadge bank commenced in 1928 and a fishery is now firmly established in the bank. The Marine Biologist and the Director of Fisheries in their administration reports and Sivalingam and Medcof (1957) and the author (1965) have reported on the progress of the Wadge bank fishery. Some of the trends indicated by an analysis of the records of the commercial trawling operations are further discussed in this paper.

The Pedro and Wadge Banks

The Pedro Bank is an extensive shallow water plateau situated off the extreme north-east corner of the Island. It is approximately 1,000 square miles in area and it would be convenient for trawlers exploiting it to operate from Trincomalee or Kankasanturai. This bank has yet to be exploited commercially. In addition to the survey of 1921-1923 by the trawler "Lilla" three other trawlers namely "Tongkol", "Bul Bul" and "Raglan Castle" have made occasional trips to the Pedro Banks. All these trips have been in the nature of surveys.

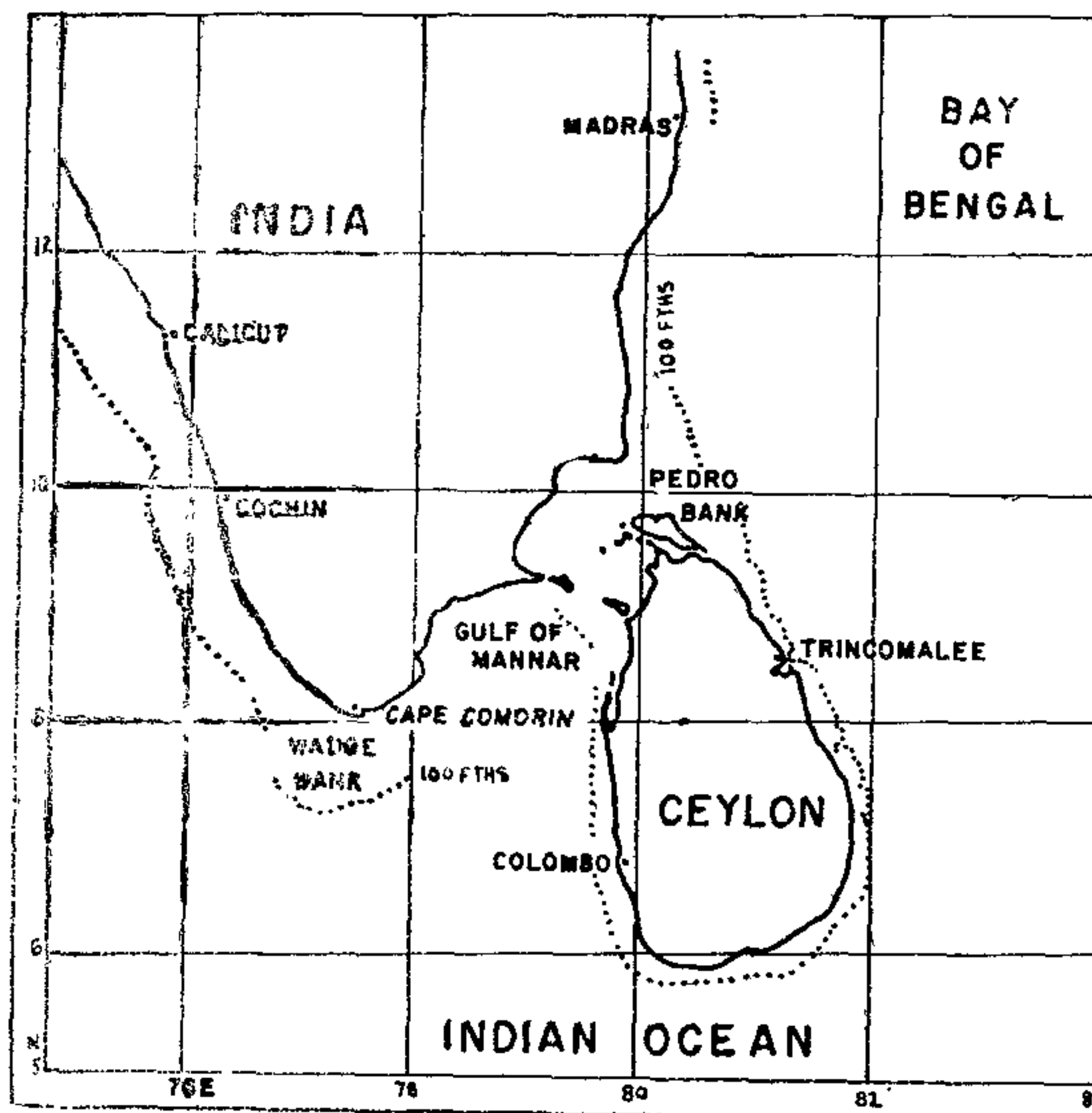


Fig. 1. Map indicating the position of the Wadge and Pedro banks.

The Wadge Bank is the continental shelf off the south tip of India extending about 50 miles seawards from Cape Comorin. It slopes gently from a depth of 10 fathoms close to

the shore to 50 fathoms after which it plunges to abyssal depths. The bank covers an area of about 4,000 square miles and its nearest point is about 115 sea miles from Colombo. A list of trawlers that have exploited it since 1907 are listed in Table I.

TABLE I
Commercial trawlers on the Wadge Bank

Violet ..	1907	On Survey
Lilla ..	1920-23	" "
Lady Goshen ..	1928-30	" "
Tongkol ..	1928-29	Commercial fishing
Bul Bul ..	1928-35	" "
Raglan Castle ..	1945-51	" "
Aringa ..	1947-48	" "
Braconglen ..	1950-63	" "
Maple Leaf ..	1953 to present	" "
Daishi Maru ..	1961	" "
* Kyoshi Maru ..	6	" "
* Kyoshi Maru ..	12	} 1962-63
* Kyoshi Maru ..	13	
Gandara ..	1964 to present	" "
Boston Spitfire ..	1965	" "
Beruwela	} Due to go into operation in 1966	
Pesalai		
Myliddy		
Meegamuwa		

* Three Bull trawlers that operated together.

The fishery on the Wadge Bank is now firmly established. Comprehensive records have been kept of the government-owned trawlers operating on it in recent years. Analysis of these records together with earlier meagre records of Tongkol and Bul Bul and the survey of 1920-23 reveal certain trends, the study of which will be helpful in the further exploitation of the bank and in extending the fishery to the Pedro Bank.

The Survey of the Pedro and Wadge Banks between 1920 and 1923

Table II summarises the results of the trawler "Lilla's" survey of the two banks between 1920-23. Using the value obtained for the catch per hour's trawling Pearson and Malpas were able to arrive at values for the catch per day's trawling (assuming that it was possible to trawl for 18 hours each day), and also the quantity that could be landed annually. They were able to show very convincingly that a profitable commercial trawler fishery could be organised on the banks thereby paving the way for such a fishery which began in 1928 on the Wadge Bank.

TABLE II
Malpas' values for fish production from the Banks

	<i>Wadge Bank</i>	<i>Pedro Bank</i>
Average catch per hour trawling (in lbs.) ..	195.3	126.3
Estimate of possible catch per day (in lbs.) ..	3,515	2,273
Estimate of fish that could be landed per year (in lbs.) ..	537,600	504,000

Some trends in Commercial Trawler operations on the Wadge Bank

(a) *Total Catch.*—Malps (1926) had shown that a trawler operating on the Wadge Bank could land approximately 0.55 million lbs. of fish annually. During the period the two trawlers "Tongkol" and "Bul Bul" were operating they each landed between 0.5 and 1.3 million lbs. of fish per year. The Raglan Castle between 1945 and 1950 landed approximately 0.6 million pounds of fish each year. The Braconglen 1952 in its first year of operation brought in 1.45 million pounds and thereafter 1.5 million pounds of fish per year upto 1958. Then the landings dropped and in 1963 she brought in only 0.9 million pounds. The Maple Leaf has been very

consistent in her landings and has averaged 1.25 million pounds each year. Gandara which was able to fish upto October 1965 during its first year of operation (9 months) brought in 0.80 million pounds of fish.

It is therefore evident that in actual commercial trawling operations the quantity of fish that could be landed by a trawler has exceeded Malpas' estimate by over 150 per cent. and shows that a trawler could land 1.25 million pounds of fish a year.

(b) *Catch per day out of port.*—Malpas (1926) estimated that in the Wadge Bank catch per day of 18 hours trawling would be 3,515 lbs. When a trawler leaves port on a fishing trip at least two days are not spent in actual fishing. This time is spent in steaming between the port and the fishing grounds. Hence assuming that a fishing trip lasts ten days, Malpas' value of 3,515 lbs. representing the catch per day is reduced to $3,515 \times 8/10 = 2,812$ lbs. per day out of port. This value is used in Figure 2 to compare with values obtained from analysis of commercial trawler records.

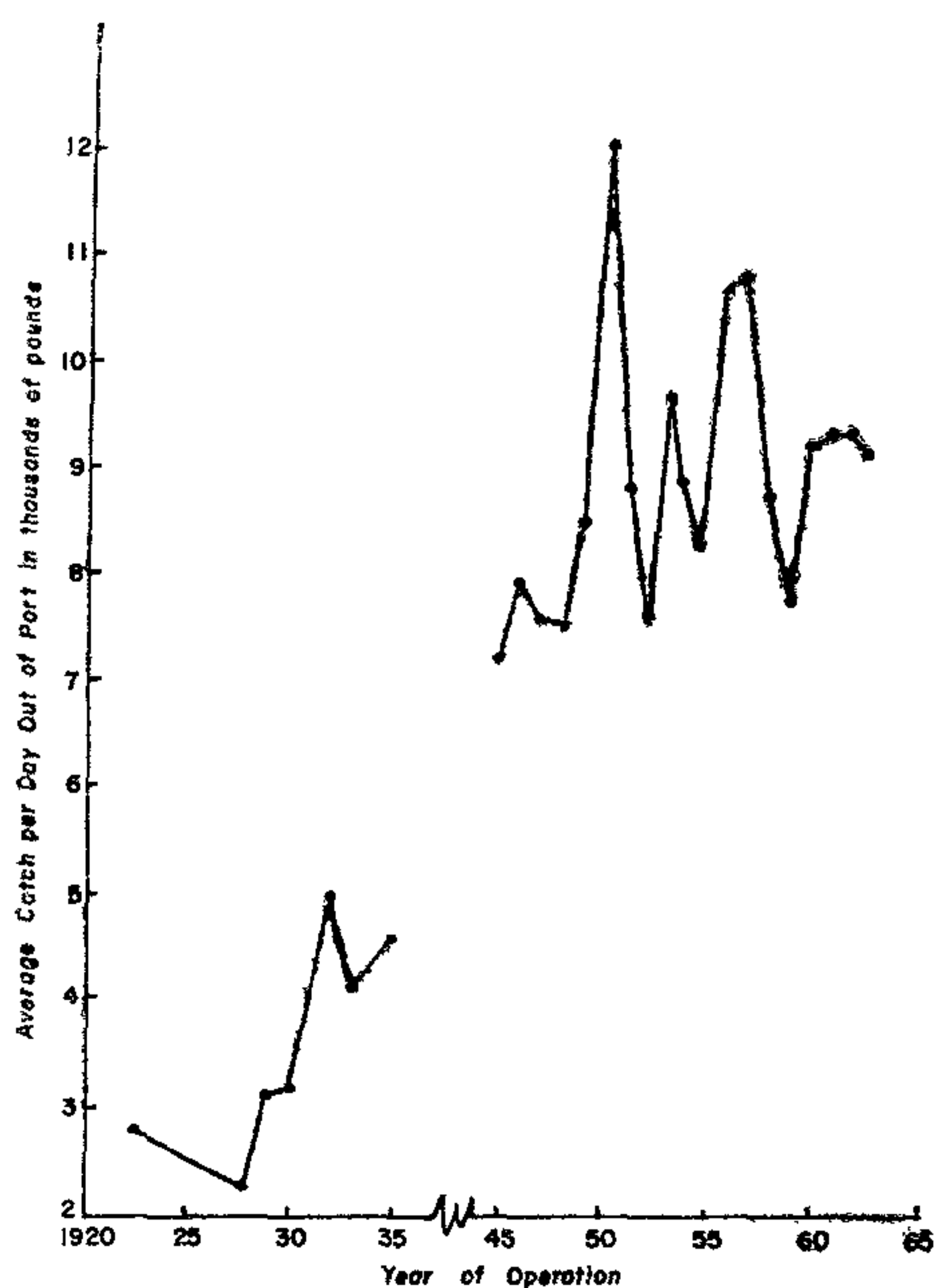
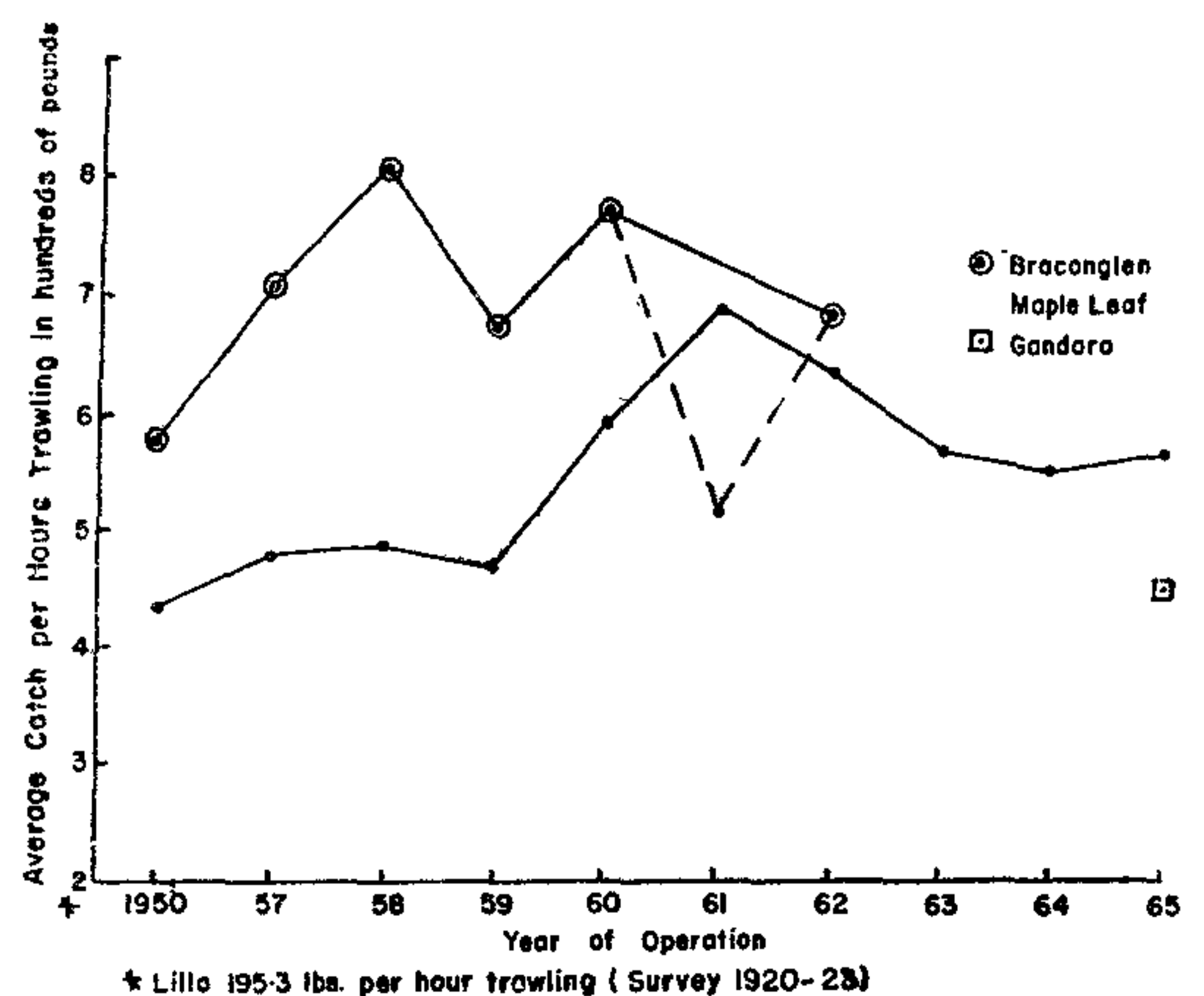


FIG. 2. CATCH PER DAY OUT OF PORT.



* Lillo 195.3 lbs. per hour trawling (Survey 1920-23)

FIG. 3. CATCH PER HOURS TRAWLING.

During the first three years of operation the Tongkol and Bul Bul were only able to obtain the catch per day out of port as estimated by Malpas. In later years this improved and during the last years of "Bul Bul's" operations she was able to average over 4,000 lbs. of fish per day out of port. 1932 was her best year of operation when she averaged 5,000 lbs. for each day's absence from port.

When trawling operations re-commenced on the Wadge Bank in 1945 the quantity of fish captured during each day's absence from port was 7,000 lbs. This kept on increasing by leaps and bounds and in recent years the value has steadied itself to around 9,000 lbs. To a certain extent this increase can be explained by the fact that trawlers remain for longer periods out at sea than before. The increase is over 300 per cent. of Malpas' estimate which was 2,812 lbs.

(c) *Catch per hour trawling.*—The survey of 1920-23 revealed that the yield to be expected from the Wadge Bank for each hour of actual trawling was 195.3 lbs. Due to the lack of records it is not possible to compare this value with those of commercial trawler operations prior to 1956. The records of such operations are available from 1956 and they are indicated in Figure 3.

The Figure shows that there is a tendency for an increase in the catch per unit effort from year to year since 1956. Braconglen's record shows that she has been able to average over 650 lbs. per hour trawling. There have been fluctuations. In 1958 she was able to average 816 lbs. per trawling hour. The value for 1961 should be disregarded as she did only two trips and that too just prior to a complete overhaul and hence could not have been working efficiently.

The Maple Leaf has not been as successful as Braconglen as far as her catch per trawling hour is concerned. However, she has shown a steady increase from 1956 onwards and is now taking in over 550 lbs. of fish per hour trawling. During 1964 and early part of 1965 Maple Leaf had discarded most of the inferior varieties of fish captured. The quantities discarded have not been recorded and hence value for catch per hour trawling will not give the correct picture. The value for these two years should therefore be slightly higher. For purposes of discussion it is assumed to be 575 lbs. per hour trawling.

Gandara has just completed a years fishing and the analysis of her captures indicated that her value for the catch per hour trawling works out to 450. The Gandara incidently is the first stern trawler to operate in Ceylon and the crew is still adapting themselves to the change and in addition the gear is being modified from time to time. It is expected that in the future the value of 450 lbs. per trawling hour will increase.

From the above taking Maple Leaf's value as a mean it can be expected for a trawler to net 575 lbs. of fish per hour trawling. This is an increase of 275 per cent. over Malpas' value.

Standing Crop of Fish on the Banks

The Wadge Bank is yielding 575 lbs. of fish per hour's trawling. By assuming that the fish on the bank are uniformly distributed it is possible to estimate the standing crop of fish on the Wadge Bank.

For purposes of such an estimate the speed of the trawler when towing the trawl is taken to be $3\frac{1}{2}$ knots and that the maximum width of the opening of the trawl mouth when in operation is $\frac{2}{3}$ of the length of the head rope. (The head rope is 78 ft. long). The trawl therefore covers 0.124 sq. miles per hour. In one hour a trawl is able to catch 575 lbs. of fish. Therefore 575 lbs. fish is present in 0.124 sq. miles, i.e., 4,621 lbs. of fish per sq. mile.

Since the area of Wadge Bank is 4,000 sq. miles the total quantity of fish available there would be $4,621 \times 400$ —approximately 1,850,000 lbs.

Malpas' report indicated that the Pedro Bank would yield 126.3 lbs. of fish per trawling hour as against 195.3 in Wadge Bank. On the above basis the standing crop of fish on the Pedro Bank would therefore be $575 \times \frac{126.3}{195.3} \times \frac{1}{0.124} = 3,014$ pounds per square mile.

The 1,000 sq. mile Pedro Bank would then have an estimated 3,000,000 lbs. of fish.

Further Exploitation of the Wadge Bank

The trends in the Wadge Bank trawl fishery discussed in the preceding paragraphs clearly indicate that the catch per unit effort has been steadily increasing. The trawlers in recent years have been landing progressively increasing catches and have been staying out on the fishing grounds for longer periods. The Wadge Bank is being fished harder than ever before. But the catch per unit effort is still on the increase and it is apparent that the stock of fish on the Wadge Bank is not decreasing indicating that there is room for further exploitations.

At present three trawlers are exploiting this bank. Four more trawlers are due to arrive early next year (1966). Of these four new trawlers, three should operate on the Wadge and the third on the Pedro Bank.

With the six trawlers operating a very careful watch will have to be maintained of landings of the trawlers. Simultaneously length frequency studies of the species of fish forming the bulk of the trawler catch should be done. These studies should within the space of a year or two give information as to the position regarding the standing crop and the feasibility of introducing more trawlers.

Exploitation of the Pedro Bank

The Pedro Bank has not received much attention by commercial trawlers mainly due to its distance from Colombo. With the expansion of Ceylon's trawler fleet it will be possible to start fishing in this bank and establish a fishery there. The Pedro Bank is only one-fourth the area of Wadge Bank and it is suggested that for every four trawlers operating on the Wadge Bank one trawler could operate on the Pedro Bank. For a start only one trawler should operate there and the first year's returns will indicate the possibility of introducing another trawler during the second year. The trawlers exploiting the Pedro Bank should be based at Trincomalee or Kankasanturai if shore facilities are available in the latter town.

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