Commercial Trawling Tests in the Great Australian Bight, 1949-52

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Summary

A historical review of previous trawlfishing enterprises in the Great Australian Bight leads on to the presentation of the general results of the combined trawlfishing operations conducted by Anglo-Australian Fisheries (Pty.) Ltd. and Anglo-Australian Trawlers (Pty.) Ltd. in the same area. The results are compared with those of past ventures in the Great Australian Bight and past and present trawlfishing operations in eastern Australian waters.

I. Introduction

Since the pioneering work of the ill-fated Federal Investigation Ship *Endeavour* under Mr. H. C. Dannevig, little exploratory trawling has been undertaken in Australian waters.

The main purpose of this paper is to record the general results of the commercial trawlfishing operations recently undertaken jointly by Anglo-Australian Fisheries (Pty.) Ltd. and Anglo-Australian Trawlers (Pty.) Ltd. Their two vessels, the *Ben Dearg* and the *Commiles*, operated in the Great Australian Bight region, a region which awaits systematic trawling and biological investigation.

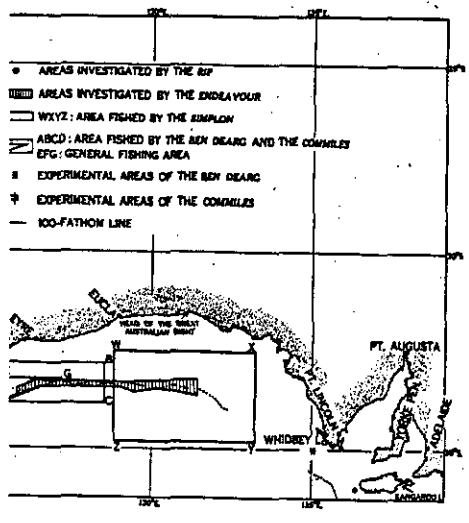
The results were obtained from analysis of the fishing logs and of the companies' cruise reports relating to each vessel. These documents were made available to the Division of Fisheries by the Western Australian Department of Industrial Development. Supplementary information was gained from conversations with some of the companies' employees and from Skipper J. B. Duthie's personal report on the operations of the S.T. *Ben Dearg*. Reference was made also to relevant details in the publications listed in Section X and in unpublished records held by the Division of Fisheries, C.S.I.R.O., Cronulla.

II. Historical Review of Trawlfishing Ventures in Western Australia and the Great Australian Bight

The Western Australian Government in 1904 operated a 90-ton unpowered ketch, the *Rip*, which fished in waters along the west coast of Australia from Shark Bay in the north to Cape Naturaliste in the south. An extract from the Report of the Chief Inspector of Fisheries for 1904 sums up the activities and results of this enterprise: "The principal object of the expedition was to determine if any suitable trawling grounds existed, to gain general information as to the distribution of our food fishes, and to endeavour to prove if it were possible to make trawling a success from a commercial standpoint." In all, 101 trawl hauls were made with otter trawl gear. "Although no payable ground has been discovered yet, it is by no means proved that they do not

* Division of Fisheries, C.S.I.R.O., Cronulla, N.S.W.

: the Department, prospecting work was all
ıad at our disposal was dependent entirely
ing to weather conditions, sail is entirely
carried on with the aid of steam power . . ."
?ndeavour carried out a few short cruises
and eight cruises in the Great Australian
ruises are given by Dannevig (1913), and



ıing areas mentioned in text.

later chartered the *Simplon* for further
extremely unfavourable weather and the
ıher with unpayable catches of fish, one
d from September 16 to October 1, 1914,
′ S. and 34° 50′ S., and long. 128° 45′ E.
ıg from 22–140 fathoms. Of the ten hauls
ɔut of these, two only were regarded as
s of fish, about 700 lb in weight, composed
es lineatus)" (Waite and McCulloch 1915).
nment steamship *Penguin* made two trawl-
The Annual Report for 1920 of the Chief
ılia points out that the first cruise was
ring the second the *Penguin* was wrecked.
he Western Australian Trawling Company
Jonthorpe. Seven cruises were undertaken,
cruises 1–3 the home port was Fremantle
t of discharge. The Western Australian
t ". . . sufficient was done to show that the

opinions expressed from time to time regarding the abundance of fish on our Great Australian Bight grounds were well founded . . .". Marketing and mechanical difficulties (engine trouble on several days) were the two main reasons why the undertaking was unsuccessful (F. F. Anderson,* personal communication).

A New South Wales trawlfishing firm in August 1933 conducted a 24-hr fishing operation with one vessel, about 100 miles south of the head of the Great Australian Bight, but without success and the vessel returned to the eastern Australian fishing grounds.

The 75-ft otter trawler *Trusan* fished in the Great Australian Bight in 1948 but this venture also was short-lived. According to the owner, catches were quite satisfactory but the price paid was insufficient.

Figure 1 shows the locations of some of the above operations.

III. Initiation of Anglo-Australian Fisheries (Pty.) Ltd. and Anglo-Australian Trawlers (Pty.) Ltd.

With the above results available (and only those of the S.T. *Bonthorpe* of any commercial merit, the other undertakings being primarily investigational), the companies launched out on a joint venture for commercial trawlfishing in the area of the Great Australian Bight. In July 1949 two trawlers, the *Ben Dearg* and the *Commiles*, sailed from England, arriving in Fremantle during September. The two trawlers were subsequently based on the port of Albany, W.A., where Seafoods Ltd. had a factory capable of handling the majority of the catches landed by the vessels.

The *Ben Dearg*, built about 1920, was 135 ft long, of 260 tons, steam powered, and with a coal-bunkering capacity of 150–160 tons. She was not refrigerated but had a cool-storage capacity for 50 tons of fish and for this purpose carried 40 tons of crushed ice. She steamed at 8–10 kt. The *Commiles* was similar and was built about 1922.

IV. General Account of Fishing Operations

Throughout the fishing operations the crew normally consisted of a skipper, one mate, a bosun, chief and second engineers, two firemen, a cook, and six or seven deck-hands.

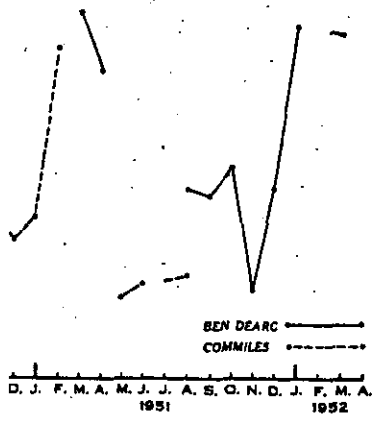
Fishing operations commenced on September 27, 1949, when the *Ben Dearg* sailed from Albany for the Great Australian Bight. The *Commiles* started her operations on October 6, 1949.

In all, the *Ben Dearg* carried out 36 cruises, extending over the period September 27, 1949 to March 3, 1952, and the *Commiles* 24 cruises, from October 6, 1949 to September 9, 1951.

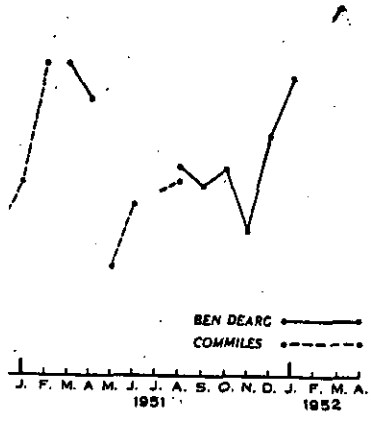
The area fished by the two vessels was bounded by latitudes 33° 52′ S. and 32° 49′ S. and longitudes 125° 18′ E. and 128° 29′ E. (see *ABCD*, Fig. 1), and each vessel was used for one or two experimental cruises in other locations (see Section IV(*a*)). The main concentration of fishing was in a triangular area (*EFG*, Fig. 1) bounded by

* Director, Commonwealth Fisheries Office.

′ S., 125° 26′ E.; and 33° 12′ S., 127° 10′E.;
:eferred to as the "general fishing area".



sence from port for general fishing area.



r's fishing for general fishing area.

mary of all cruises undertaken by the two
: of absence from port, hours spent fishing,
he individual cruises for which data are

cruises, the cruises to and from Adelaide,
ta are available, the *Ben Dearg* made 28
ıge absence from port for these cruises was
per cruise was 44,305 lb, the average catch
:rage catch per hour's fishing was 345 lb.
during the 30 months of operating was

For the *Commiles*, the average absence on her 22 fishing cruises in the general fishing area was 13 days, with an average catch per cruise of 33,255 lb. The average catch per day's absence was 2594 lb and the average catch per hour's fishing 289 lb. The total catch from the general fishing area during the 23 months of operating was 731,620 lb.

TABLE 1

FISHING OPERATIONS OF F.I.S. ENDEAVOUR IN THE GREAT AUSTRALIAN BIGHT

Number of Cruises	Period	Locality	Fishing Time (hr)	Catch (lb)	
				Total	Per Hour's Fishing
2	Feb.–Mar. 1912	Edge of shelf	144	29,232	203
3	Feb.–Apr. 1913	Edge of shelf			
3	May–June 1913	Deeper section	122	13,939	114
8			266	43,171	162

The chief species of fish caught were red snapper (*Trachichthodes gerrardi* Günther), swallowtail (*Trachichthodes lineatus* Cuvier and Valenciennes), nannygai (*Trachichthodes affinis* Günther), jackass fish (*Nemadactylus macropterus* Bloch & Schneider), boarfish (*Zanclistius elevatus* Ramsay & Ogilby, *Pentaceropsis recurvirostris* Richardson & Waite, and *Paristiopteris labiosus* Günther), deep sea flathead (*Neoplatycephalus speculator* Klunzinger), queen snapper (*Nemadactylus valenciennesi* Whitley), and silver flounder (*Nelusetta ayraud* Quoy & Gaimard). The group of mixed species included sawtooth, latchet, gurnard, skate, and shark.

Dissection of the total catch per cruise into catch of the above species or groups of species is possible only for 19 cruises of the *Ben Dearg* and 13 of the *Commiles* (see Tables 9*A* and 9*B* for information available.)

Table 10 gives the catch of fish landed each month by the two vessels for all cruises.

Figures 2 and 3 show the monthly catch per day's absence and monthly catch per hour's fishing from the general fishing area data only. The data used in these figures are embodied in Tables 7*A*, 7*B*, 8*A*, and 8*B*.

(*a*) *Experimental Cruises with Results*

The locations of the experimental cruises are shown in Figure 1. The results, as will be seen from Tables 7*A*, 7*B*, 8*A*, and 8*B*, were poor, and little comment is really necessary. They are important only in a general discussion of the companies' activities, in that time and money were expended on these exploratory cruises.

V. COMPARISON WITH TWO PREVIOUS FISHING VENTURES IN THE GREAT AUSTRALIAN BIGHT REGION

(*a*) *F.I.S.* Endeavour

Table 1, compiled from Dannevig's (1913) data, summarizes the results of the F.I.S. *Endeavour*'s cruises in the Great Australian Bight.

TABLE 2

FISHING OPERATIONS OF S.T. BONTHORPE IN THE GREAT AUSTRALIAN BIGHT

Cruise Number	Period	Days of		Number of Trawls	Trawling Time (hr)	Catch (lb)					Remarks
		Absence from Port	Trawling			Edible Fish	Offal Fish	Total	Per Hour's Trawling	Per Day's Absence	
	1929										
1	Oct.	—	—	—	—	17,920	—	17,920*	—	—	—
2	Oct.–Nov.	—	—	—	—	26,880	—	26,880*	—	—	—
3	Nov. 12–29	18	—	—	—	33,600	—	33,600*	—	—	20 Tons of gurnard etc. thrown overboard
4	Dec. 12–19	—	—	—	—	—	—	—	—	—	—
	1930										
5	Jan. 9–21	12	7	30	122½	23,850	21,690	45,540	372	3,795	—
6	Feb. 1–13	—	7	26	118	18,360	11,925	30,285	257	—	—
7	Feb. 20–Mar. 5	14	1	1	2	2,700	45	2,745	1,373	196	Engine trouble several days

* Approximations.

The average catches per hour's fishing in the general fishing area for the *Ben Dearg* (345 lb) and the *Commiles* (289 lb) compare very favourably with the *Endeavour*'s results. A factor to be considered, however, in making this comparison is that the *Endeavour* fished with a small trawl net, 95-ft headrope, without Vigneron-Dahl gear, whereas the *Ben Dearg* and the *Commiles* both used Vigneron-Dahl gear.

(*b*) *S.T.* Bonthorpe

The records of this enterprise are summarized in Table 2, which is compiled from Serventy's unpublished data.

Table 2 admits of some comparison with the records of the *Ben Dearg* and the *Commiles*. The mean average catch per hour's fishing for the *Ben Dearg* and the *Commiles* whilst fishing in the general fishing area was 322 lb, whereas the mean average catch per hour's fishing for two trips (5 and 6) undertaken by the *Bonthorpe* was 315 lb. According to Serventy (1937), Vigneron-Dahl gear was used on the *Bonthorpe*.

VI. Comparison with the Early Eastern Australian Trawlfishery

(*a*) *F.I.S.* Endeavour

Table 3, also compiled from Dannevig's (1913) data, shows the results of the early exploratory work undertaken by the *Endeavour* in eastern Australian waters, and should be read in conjunction with Section V (*a*).

Table 3

Fishing operations of F.I.S. Endeavour in eastern Australian waters

Number of Cruises	Period	Locality	Fishing Time (hr)	Catch (lb)	
				Total	Per Hour's Fishing
16	Apr. 1909–Aug. 1913	Gabo I. to Sydney	228¼	84,721	371
23	Apr. 1909–Aug. 1913	South of Gabo I.	432¼	81,715	189
39			660½	166,436	252

(*b*) *Early Years of the State Government Trawlfishing Enterprise in Eastern Australia*

Table 4 shows the total catches made in the different years by the steam trawling enterprise in eastern Australia (Herlihy 1927).

The average catch per vessel per year in 1950 for the two companies operating in the Great Australian Bight, for all cruises, was 502,210 lb, comparing favourably with the rates of fishing in the earlier years 1915–16 and 1916–17 (Table 4).

Vigneron-Dahl gear was not used in the early years of the eastern Australian trawlfishery.

TABLE 4

EARLY EASTERN AUSTRALIAN TRAWLFISHING OPERATIONS

Year	Number of Vessels	Catch (lb)	
		Total	Per Vessel Per Year
1915–16	3	1,630,380	543,460
1916–17	3	1,637,070	545,690
1917–18	3	1,897,650	632,550
1918–19	3	3,023,640	1,007,880
1919–20	4–7	5,585,160	—
1920–21	7	5,527,140	789,591
1921–22	7	5,404,680	772,097
1922–Feb. 1923	7	3,258,240	—

VII. COMPARISON WITH THE PRESENT-DAY EASTERN AUSTRALIAN TRAWLFISHERY

During 1950 12 steam trawlers were operating in eastern Australian waters and the average catch per vessel per month was 61,532 lb, with an average catch per vessel per year of 738,387 lb. The corresponding figures for the combined companies in 1950 were 41,851 lb and 502,210 lb.

TABLE 5

TRAWLFISHERY CATCHES

Eastern Australian data from Fairbridge (1948); Western Australian data from general fishing area

Year	Number of Vessels	Rate of Catch (cwt/hr)	Year	Number of Vessels	Rate of Catch (cwt/hr)
Eastern Australia			Eastern Australia		
1918	3	2·8	1937–38	14	2·6
1919	7	4·4	1938–39	5	2·5
1920*	6	6·8	1939–40*	8	2·1
1921	6	5·2	1940–41*	6	2·1
1922	7	5·1	1941–42	4	2·3
1923*	7	5·6			
1930	—	3·0	Western Australia		
1936	2	—			
1936–37	5	—	1949–52	2	2·9

* Part of year only.

Nine steam trawlers operated in eastern Australian waters during October 1952. For a total of 191 days' absence from port the total catch of fish was 558,400 lb, an average catch per day's absence of 2924 lb. During November 1952 10 steam trawlers operated and for 234 days' absence from port they landed a catch of 672,560 lb, an

average catch per day's absence of 2874 lb. The average catch per day's absence of the *Ben Dearg* and the *Commiles*, when they were operating in the general fishing area, was 2957 lb. Apart from the data of Fairbridge (1948, Table 2), particulars of days of absence are not available for any of the eastern Australian trawlers earlier than October 1952.

Fairbridge (1948, Tables 2 and 3) lists catch in cwt per hour's trawling and catch in cwt per day's absence from port during certain years for some of the vessels operating in the eastern Australian trawlfishery. Tables 5 and 6 incorporate extracts from Fairbridge's data with similar data for the Western Australian trawling venture and for October and November 1952 in the eastern Australian trawlfishery.

TABLE 6

TRAWLFISHERY CATCHES

Eastern Australian data, 1927–42, from Fairbridge (1948); 1952, from unpublished records held by Division of Fisheries, C.S.I.R.O.; Western Australian data from general fishing area

Year	Number of Vessels	Rate of Catch (cwt/day's absence)	Year	Number of Vessels	Rate of Catch (cwt/day's absence)
Eastern Australia			Eastern Australia		
1927	1	49	1939	7	24
1928	1	42	1940	4	23
1929	1	35	1941*	2	26
1930	1	28	1942*	2	24
1931	1	26	Oct. 1952	9	26·1
1932	1	29	Nov. 1952	10	25·7
1933	1	23			
1934*	1	—	Western Australia		
1937	7	22			
1938	7	24	1949–52	2	26·4

* Part of year only.

VIII. DISCUSSION

The results and comparisons set out above allow some generalizations to be made.

The F.I.S. *Endeavour*'s investigations revealed the existence of trawling grounds in the Great Australian Bight. The *Bonthorpe*'s findings suggested the commercial possibilities of trawlfishing in the western portion of the area and the results of the recent commercial undertaking indicate more clearly what the commercial prospects are in the general fishing area.

In attempting to assess the full value of the results of Anglo-Australian Fisheries (Pty.) Ltd. and Anglo-Australian Trawlers (Pty.) Ltd., it must be remembered that the reliability of their two vessels to fish efficiently left much to be desired. From the information at hand the impression is gained that mechanical defects were a constant source of loss of fishing time, especially with the *Commiles*. In the cruise reports

there are repeated references to engine defects coupled with poor-quality coal supplies. Boiler trouble very occasionally caused a return to port when adequate coal and ice supplies still remained. In addition, setbacks resulted from the unfortunate necessity of carrying inexperienced crew members. On occasions two trimmers were carried and the deck-hands had to be reduced to five instead of six, because the ships had accommodation for only 15 crew members.

Several types of trawl gear were experimented with during the operations. The companies, after a time, formed the opinion that good fishing was generally to be found where there was a fair amount of sponge. Attempts were, therefore, made to lighten the gear used, to enable the trawl to work over the top of this sponge and avoid bringing it on board.

The original type of trawl used was a "Peter Carey" with a 70–ft headrope, but this and its fixtures proved unsatisfactory. The 48–ft common trawl with a headline of 96 ft was later used on the venture and proved more successful, its advantages including lightness and easier handling.

The activities and results of the joint companies resemble those of the initial trawlfishing enterprise in eastern Australian waters. Table 4 brings out the similarity. Both enterprises, for example, met with similar difficulties respecting uncharted fishing grounds, lack of knowledge of fish movements, and the like. By the year 1919–20 the eastern Australian trawlfishing fleet had been enlarged and with knowledge of fishing and of the fishing grounds increasing, the average annual catch per vessel for the seven vessels operating had risen to almost 800,000 lb. Catches from the Great Australian Bight might be expected to improve similarly, as experience accumulates.

One notable factor to be borne in mind when comparing these two ventures is that in early years on the eastern Australian fishing grounds the catch of fish landed was predominantly of one species, the tiger flathead (*Neoplatycephalus macrodon* Ogilby), whereas the catches from the Great Australian Bight consisted of a number of species.

Regrettably, the comparison with present-day fishing in eastern Australian waters is sketchy. This, however, is owing to the scanty material available relating to that fishery. Nevertheless, it is interesting to note that the data for catch per day's absence from port are similar for the eastern Australian fishing grounds and the general fishing area. The present-day trawling fleet fishing on the eastern Australian grounds no longer has the distinction of landing "paying catches" predominantly of the one species, but, as on the Great Australian Bight grounds, is dependent on an assortment of species, chiefly nannygai (*Trachichthodes affinis*), morwong (*Nemadactylus macropterus*), and tiger flathead (*Neoplatycephalus macrodon*). Tables 5 and 6, showing catch in cwt per hour's trawling and catch in cwt per day's absence from port, are important, as the records for the general fishing area compare favourably with the data presented by Fairbridge (1948).

Three aspects of the fishing enterprise by the combined companies are outside the scope of this analysis:

(1) Why the companies ceased to function;
(2) What the results mean in terms of "payable quantities";
(3) The biological aspects, e.g. seasonal abundance and movements of fish.

spect (2) is best left for assessment in the light of available markets, running costs, id prices holding at the time of reading. Although the companies' fishing logs and uise reports revealed some information which could be included under aspect (3), was felt that this should be held over until further research investigations are arried out in the Great Australian Bight.

The object of the paper has been to present the general results of the companies' shing operations and these have been evaluated through comparison with certain other ast and present trawlfishing enterprises in Australia. The results will serve as a guide any future development of trawlfishing in the Great Australian Bight.

IX. Acknowledgments

The author wishes to express his thanks to Dr. M. Blackburn, Division of isheries, C.S.I.R.O., for helpful discussion and criticism of the manuscript; and to r. D. L. Serventy, Mr. F. F. Anderson, and Mr. A. J. Fraser, who read and commented n the draft of the paper. Mr. L. Glauert, of the Western Australian Museum, kindly elped with the scientific and vernacular nomenclature of fishes caught by the awlers.

The cooperation of the Western Australian Department of Industrial Develop-ent in making the companies' records available is acknowledged. Thanks are due to aptain H. Johnston, Technical Adviser, Commonwealth Fisheries Office, who pplied valuable information on trawlfishing in Australian waters, and to Skipper . B. Duthie, of Anglo-Australian Fisheries (Pty.) Ltd., for information on trawlfishing n the Great Australian Bight.

The figures were prepared by Mr. R. Breach, Division of Fisheries, C.S.I.R.O., nder the supervision of Mr. A. Proctor.

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Appendix I

Joint trawlfishing operations by Anglo-Australian Fisheries (Pty.) Ltd. and Anglo-Australian Trawlers (Pty.) Ltd.

Table 7*A*

Summary of all cruises: Ben Dearg

Cruise Number	Period	Catch (lb)	Remarks	Cruise Number	Period	Catch (lb)	Remarks
	1949				1951		
1	27.ix–6.x	33,951	G.F.A.*	20	14.ii–1.iii	62,795	G.F.A.
2	14.x–25.x	22,740	G.F.A.	21	7.iii–20.iii	79,425	G.F.A.
3	29.x–13.xi	39,034	G.F.A.	22	30.iii–11.iv	62,774	G.F.A.
4	15.xi–2.xii	31,914	G.F.A.	23	17.iv–29.iv	40,321	G.F.A.
5	5.xii–12.xii	1,040	Experimental	24	7.v–12.v	207	Experimental
6	15.xii–29.xii	25,126	G.F.A.	25	13.vi–22.vi	1,893	Experimental
	1950			26	27.vi–12.vii	3,282	Experimental
7	10.i–24.i	31,438	G.F.A.	27	18.vii–2.viii	39,267	G.F.A.
8	26.i–7.ii	50,719	G.F.A.	28	13.viii–27.viii	36,948	G.F.A.
9	28.ii–15.iii	63,971	G.F.A.	29	13.ix–27.ix	34,465	G.F.A.
10	18.iii–2.iv	56,777	G.F.A.	30	3.x–18.x	43,065	G.F.A.
11	5.iv–18.iv	52,122	G.F.A.	31	29.x–8.xi	13,293	G.F.A.
12	22.iv–4.v	51,398	G.F.A.	32	22.xi–2.xii	28,512	G.F.A.
13	8.v–23.v	70,708	G.F.A.		1952		
14	9.vi–21.vi	37,031	G.F.A.	33	8.i–20.i	57,409	G.F.A.
15	24.vi–10.vii	38,726	G.F.A.	34	25.i–5.ii	776	Experimental
16	13.vii–28.vii	43,053	G.F.A.	35	26.ii–9.iii	77,927	G.F.A.
17	1.viii–16.viii	30,389	G.F.A.	36	14.iii–24.iii	35,988	G.F.A.
18	5.x–15.x	8,150	To Adelaide				
19	11.xi–26.xi	36,388	From Adelaide				

* General fishing area.

Table 7*B*

Summary of all cruises: Commiles

Cruise Number	Period	Catch (lb)	Remarks	Cruise Number	Period	Catch (lb)	Remarks
	1949				1950		
1	6.x.–17.x	13,356	G.F.A.	13	19.viii–31.viii	21,150	G.F.A.
2	22.x–1.xi	26,563	G.F.A.	14	5.ix–13.ix	10,407	G.F.A.
3	5.xi–17.xi	21,173	G.F.A.	15	20.ix–3.x	48,029	G.F.A.
4	23.xi–5.xii	61,099	G.F.A.	16	20.x–2.xi	31,576	G.F.A.
5	10.xii–22.xii	30,639	G.F.A.	17	6.xii–17.xii	22,285	G.F.A.
	1950				1951		
6	5.i–20.i	21,451	G.F.A.	18	10.i–22.i	29,175	G.F.A.
7	7.ii–21.ii	40,627	G.F.A.	19	26.i–9.ii	67,578	G.F.A.
8	24.ii–9.iii	51,059	G.F.A.	20	16.v–28.v	13,828	G.F.A.
9	13.iii–25.iii	54,455	G.F.A.	21	31.v–14.vi	19,071	G.F.A.
10	30.iii–12.iv	51,079	G.F.A.	22	9.vii–19.vii	1,662	Experimental
11	17.iv–29.iv	41,451	G.F.A.	23	7.viii–18.viii	15,588	G.F.A.
12	4.v–18.v	39,981	G.F.A.	24	3.ix–9.ix	15,827	Experimental

TABLE 8A

CATCH DATA FOR ALL CRUISES: BEN DEARG

Cruise Number	Absence from Port (days)	Fishing Time (hr)	Catch (lb)		Cruise Number	Absence from Port (days)	Fishing Time (hr)	Catch (lb)	
			Per Day's Absence	Per Hour's Fishing				Per Day's Absence	Per Hour's Fishing
1	9	50	3772	679	19*	15½	176	2348	207
2	11	58	2067	392	20	15½	175	4051	359
3	15	102	2602	383	21	12½	172	6229	462
4	16	94	1995	340	22	12¾	149	4923	421
5*	7	16	149	65	23	12	135	3360	299
6	14	80	1795	314	24*	5¾	—	37	—
7	14	122	2246	258	25*	9	15	210	126
8	12	—	4227	—	26*	16	33½	205	98
9	16	157	3998	407	27	15	144	2618	273
10	16	198	3549	287	28	14	131	2639	282
11	14	187	3723	279	29	14	138	2462	250
12	13	87	3954	591	30	15	158	2871	273
13	16	180	4419	393	31	11	70	1208	190
14	14	130	2645	285	32	11	90	2592	317
15	16½	132	2347	293	33	12	146	4784	393
16	16	174	2691	247	34*	10	7	78	111
17	15½	106	1961	287	35	13	141	5994	553
18*	10	73	815	112	36	11	93	3272	387

* Experimental cruise.

TABLE 8B

CATCH DATA FOR ALL CRUISES: COMMILES

Cruise Number	Absence from Port (days)	Fishing Time (hr)	Catch (lb)		Cruise Number	Absence from Port (days)	Fishing Time (hr)	Catch (lb)	
			Per Day's Absence	Per Hour's Fishing				Per Day's Absence	Per Hour's Fishing
1	11	49	1214	273	13	13	110	1627	192
2	9½	68	2796	391	14	9	46	1156	226
3	12	110	1764	193	15	14	138	3431	348
4	11½	107	5313	571	16	14	124	2255	255
5	12	75	2553	409	17	12	116	1857	192
6	14½	50	1479	429	18	13	116	2244	252
7	14	180	2902	226	19	15	165	4505	410
8	14	194	3647	263	20	13	96	1064	144
9	13½	190	4034	287	21	15	85	1271	224
10	14	169	3649	302	22*	10	42	166	40
11	12	129	3454	321	23	11	61	1417	256
12	15	157	2665	255	24*	6	73	2638	217

* Experimental cruise.

TABLE 9A

ANALYSIS OF SPECIES CAUGHT : BEN DEARG

Cruise Number	Fishing Time (hr)	Month	Catch (lb)						
			Red Snapper*	Jackass	Boarfish	Flathead	Queen Snapper	Silver Flounder	Mixed
9	157	Mar.	17,176	14,783	9,296	5,083	3,621	7,661	6,351†
11	187	Apr.	14,104	11,884	12,856	2,512	1,754	2,821	6,191
12	87	Apr.–May	10,323	15,934	7,189	5,530	6,272	1,280	4,870
15	132	June–July	16,194	9,724	3,655	896	299	3,233	4,725
16	174	July	21,110	7,663	3,713	1,288	2,482	2,187	4,610
17	106	Aug.	14,344	6,783	2,319	1,017	1,735	957	3,234
20	175	Feb.	39,560	4,507	4,181	3,044	2,253	3,298	5,952
21	172	Mar.	53,730	6,602	6,301	1,212	1,435	4,696	5,449
22	149	Apr.	41,214	3,750	6,244	2,763	—	3,309	5,494
23	135	Apr.	17,776	6,276	6,516	1,104	—	4,868	3,781
27	144	July	18,503	9,798	1,772	660	2,450	2,367	3,717
28	131	Aug.	15,725	9,739	2,046	809	2,560	1,760	4,309
29	138	Sept.	12,586	8,892	1,937	2,305	2,179	1,387	5,179
30	158	Oct.	16,118	13,096	2,676	2,972	3,190	1,693	3,320
31	70	Nov.	4,783	2,739	395	2,151	361	—	2,664
32	90	Nov.	9,579	4,482	997	8,346	1,035	1,178	2,895
33	146	Jan.	20,942	4,881	4,144	9,952	2,328	8,584	6,578
35	141	Mar.	43,716	5,474	3,427	12,815	3,443	3,396	5,656
36	93	Mar.	17,069	3,562	3,621	4,792	1,241	2,269	3,434

* Totals include *Trachichthodes gerrardi* and *T. affinis*.

† Includes 2037 lb lost through putrefaction.

TABLE 9*B*

ANALYSIS OF SPECIES CAUGHT : COMMILES

Cruise Number	Fishing Time (hr)	Month	Catch (lb)						
			Red Snapper*	Jackass	Boarfish	Flathead	Queen Snapper	Silver Flounder	Mixed
8	194	Feb.–Mar.	26,423	2,844	4,594	979	3,919	7,430	4,870
9	190	Mar.	31,100	4,520	6,433	1,661	4,264	3,013	3,464
10	169	Mar.–Apr.	19,311	6,032	8,325	861	5,907	4,033	6,610
11	129	Apr.	15,888	6,400	6,395	1,866	4,554	1,826	4,522
13	110	Aug.	8,188	959	8,184	—	1,162	1,560	1,097
14	46	Sept.	2,482	1,837	2,719	971	370	220	1,808
15	138	Sept.–Oct.	26,012	4,842	4,190	5,103	2,064	2,071	3,747
16	124	Oct.–Nov.	17,065	2,274	1,170	4,826	2,065	2,424	1,752
17	116	Dec.	8,696	3,312	1,995	2,849	1,386	1,372	2,675
18	116	Jan.	15,552	2,888	3,015	1,966	1,544	2,889	1,321
19	165	Jan.–Feb.	47,412	4,182	3,312	3,533	2,655	2,917	3,567
20	96	May	3,623	2,032	1,953	437	—	3,301	2,482
21	85	May–June	5,554	5,175	2,540	873	1,576	681	2,672

* Totals include *Trachichthodes gerrardi* and *T. affinis*.

TABLE 10

MONTHLY CATCH RECORDS FOR ALL CRUISES

Periods when a vessel was not operating are shown by blanks in catch columns

Month	Catch (lb)			Month	Catch (lb)		
	Ben Dearg	*Commiles*	Total		*Ben Dearg*	*Commiles*	Total
1949				1951			
Oct.	56,691	13,356	70,047	Jan.	—	29,175	29,175
Nov.	39,034	47,736	86,770	Feb.	—	67,578	67,578
Dec.	58,080	91,738	149,818	Mar.	142,220	—	142,220
				Apr.	103,095	—	103,095
	153,805	152,830	306,635	May	207	13,828	14,035
				June	1,893	19,071	20,964
1950				July	3,282	1,662	4,944
Jan.	31,438	21,451	52,889	Aug.	76,215	15,588	91,803
Feb.	50,719	40,627	91,346	Sept.	34,465	15,827	50,292
Mar.	63,971	105,514	169,485	Oct.	43,065	—	43,065
Apr.	108,899	92,530	201,429	Nov.	13,293	—	13,293
May	122,106	39,981	162,087	Dec.	28,512	—	28,512
June	37,031	—	37,031				
July	81,779	—	81,779		446,247	162,729	608,976
Aug.	30,389	21,150	51,539				
Sept.	—	10,407	10,407	1952			
Oct.	8,150	48,029	56,179	Jan.	57,409	—	57,409
Nov.	36,388	31,576	67,964	Feb.	776	—	776
Dec.	—	22,285	22,285	Mar.	113,915	—	113,915
	570,870	433,550	1,004,420		172,100	Nil	172,100
				Grand Totals	1,343,022	749,109	2,092,131